M7 PRIEST 105MM HOWITZER MOTOR CARRIAGE

STEVEN J. ZALOGA ILLUSTRATED BY RICHARD CHASEMORE

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NEW VANGUARD 201

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M7 PRIEST 105MM HOWITZER MOTOR CARRIAGE

ORIGINS

The essential triad of combat arms for *Blitzkrieg* warfare in World War II consisted of tank, infantry, and artillery forces. While the mechanization of tank and armored infantry forces has been amply documented, the important role of armored field artillery has not received commensurate attention. The Allied armored divisions enjoyed significant advantages over the Panzer divisions in many respects, including the technical quality of their armored artillery, the greater mechanization of their field artillery force, and their more sophisticated fire control tactics. At the core of these advantages was a family of armored field guns based on the M3 Grant/Lee and M4 Sherman medium tanks.

The US Army was the first to mechanize all of the field artillery in its armored divisions. The backbone of this armored artillery force was the M7 105mm Howitzer Motor Carriage (HMC), which combined the standard 105mm howitzer with the chassis of the Sherman tank. Canada followed the same path a year later with the Sexton 25-pounder, based on a Canadian derivative of the Sherman tank chassis, and armed with the standard British field gun.

The M7 105mm HMC, known in the British Army as the Priest, first saw combat at El Alamein in the autumn of 1942. It subsequently took part in all the major campaigns in the Italian and European theaters and was the most widely used armored combat vehicle of this category during World War II. The Sexton became the standard self-propelled gun of the British Army and saw combat during the Normandy campaign and later in Italy. Both types remained in service through the early years of the Cold War, and could be found in dwindling numbers well into the 1970s.

Tactical requirement

The US Army began to develop self-propelled field artillery in the concluding months of World War I, inspired by French work in this field. Many of the early designs were based on the Holt caterpillar tractors. However, the artillery branch was primarily concerned about the ability to move corps-level heavy artillery in rough terrain. More than 300 self-propelled guns were ordered for delivery by February 1919, but the end of the war meant that the program was terminated after only a small portion of the weapons had been completed. The handful of self-propelled guns left over from the 1918

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program permitted continued experimentation after the war. In May 1919, a study of the US Army's future artillery requirements recommended continued motorization and mechanization of the field artillery, but the sharp decline in US Army budgets in the early 1920s killed the early efforts to adopt self-propelled field artillery. In 1928, the War Department established an experimental mechanized force at Camp Meade, Maryland, that experimented with some of the leftover 1918 caterpillar mounts as well as with novel ideas such as truck-borne portée guns. The experiments faltered owing to the obsolescence of much of the equipment. To support the mechanized force, the Field Artillery School at Fort Sill began another set of trials of the M1916 75mm gun on the Holt Mark VII caterpillar mount in the spring of 1931. This experiment examined whether such mounts were suitable either as an "accompanying gun" for direct-fire support of mechanized units, or as a self-propelled artillery weapon for indirect-fire support. The old Holt tractor proved too arthritic during the trials but the basic concept "merited further consideration." As funds were lacking, little further development took place. In 1934, the 1st Battalion, 6th Field Artillery was established as the army's first mechanized artillery unit, attached to the new 1st Cavalry (Mechanized). This battalion originally used truck-towed 75mm guns, but switched to half-tracks once they became available. This was the only mechanized artillery unit in the US Army when war broke out in Europe in 1939.

The US Army underwent a sudden and frantic modernization in 1940–41, in the expectation that the United States would be dragged into the war in either Europe or the Pacific. The formation of the Armored Force in 1940 revived the idea of self-propelled field artillery. The original 1940 table-of-organization-and-equipment (TO&E) for the armored division assigned each division an armored field artillery regiment. When the first of these were formed in the spring of 1940, there was no weapon ready for their use. Not only was there no suitable self-propelled howitzer, there were not enough of the new towed 105mm howitzers available to equip the armored field artillery battalions. As a result, expedient equipment was issued, typically the M1897 75mm gun towed by the new M2 half-track car.

Many other armies had experimented with self-propelled field artillery, but by 1941, none had made them a standard piece of equipment. Germany had adopted the Sturmgeschutz III, but this was an assault gun for direct infantry support, and not intended for the standard field artillery role of indirect fire. Likewise, the 15cm sIG33(Sf) auf PzKpfw I was an attempt to make the 150mm infantry gun more mobile for use in Panzer divisions, but the Panzer divisions continued to use towed 105mm field guns as the mainstay of their artillery units.

One of the earliest efforts at a self-propelled 105mm howitzer was this pilot based on the World War I Caterpillar Mark VI motor carriage Model 1920. It is seen here on mobility trials at Aberdeen Proving Ground on November 3, 1921, being driven into the shallow water of the Chesapeake Bay to test its shallow fording capability. (Author's collection)

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The eccentric inventor J. Walter Christie was better known for his later tank designs, but he began his military vehicle career promoting his self-propelled gun chassis to the US Army. This is one of his convertible carriages, capable of being driven on either tracks or wheels. This particular version was designed to carry either a 75mm gun or a 105mm howitzer and is seen here, bogged down in the mud, during a trial at Aberdeen Proving Ground on November 8, 1921. (Author's collection)

The primary stimulus to the American effort came in August 1941 when Maj Gen Jacob Devers was assigned to lead the Armored Force following the illness and death of its founder, Adna Chaffee. While the early Armored Force had been led primarily by officers from the cavalry and infantry branches, Devers was an artilleryman, and took particular interest in the issue of mechanized artillery support in the new armored division.

Devers saw a requirement for several different types of self-propelled field artillery. There was a need for a self-propelled 75mm howitzer for direct-fire support of infantry and armored cavalry reconnaissance units. This type of vehicle inherited the "accompanying gun" idea from the prewar years, but was usually called an assault gun in World War II. There was also a requirement for a self-propelled 75mm antitank gun, but this was under the purview of the new Tank Destroyer Command, not the Armored Force. Finally and most importantly, Devers sought a 105mm howitzer motor carriage as the primary weapon for the armored division's artillery, since by this time the US Army infantry divisions were adopting the 105mm howitzer as the standard divisional artillery piece instead of the older 75mm gun. Under Devers' direction, the armored divisions were reorganized in March 1942. The armored field artillery regiment was replaced by three armored field artillery battalions (AFAB). Each AFAB included three batteries, each with six howitzer motor carriages (HMC) for a total of 18 per battalion and 54 per division.

DEVELOPMENT AND OPERATION

T19 105mm HMC

A pilot of the T19 105mm HMC was assembled and tested at Aberdeen Proving Ground (APG) in November 1941 and put through trials. After the improvements were made, serial manufacture began in January 1942, less than three months from the start of the program. The T19 105mm HMC was authorized for service on March 25, 1942, and 324 were manufactured by the time production ended in April 1942. The T19 105mm HMC was deployed with the new AFAB in the 1st and 2nd Armored Divisions and was also delivered to some infantry cannon companies.

The cannon companies were small artillery formations attached to each infantry regiment for immediate artillery support. They could be used as "accompanying guns" for direct-fire support, or to supplement the infantry divisions' field artillery battalions for general support. They were organized as two light platoons with three T30 75mm HMC each and a heavy platoon with two T19 105mm HMC. While the T19 105mm HMC was an adequate design, it was evident from the outset that it had distinct shortcomings since the chassis was really not durable enough for such a powerful weapon and the small fighting compartment permitted only eight ready rounds of ammunition to be carried.

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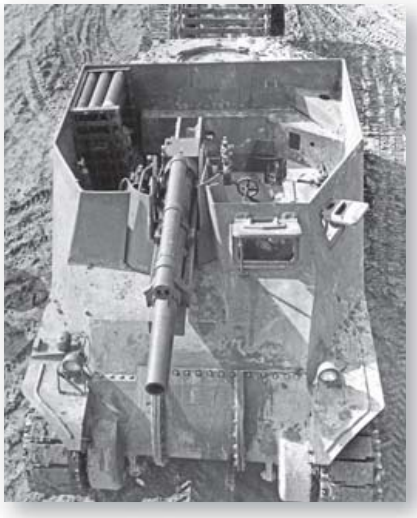
The stablemate of the M7 105mm HMC was the T19 105mm HMC. This combined the same M2A1 105mm howitzer, but on the M3 half-track. This shows a pair of T19 105mm HMC of the Cannon Company, 7th Infantry, 3rd Division on parade in Rabat on December 19, 1942, as they pass a viewing stand including Gen George Patton and the French commander, Gen Nogues. The vehicle to the left is named "Ironsides."

T32 105mm HMC

In the meantime, two T32 105mm HMC pilots were constructed at the Baldwin Locomotive Works and shipped to APG for trials. The design was based on the existing M3 medium tank and had a similar superstructure except that it was completely open at the top and had the M2A1 105mm howitzer mounted centrally in the fighting compartment. One of the first changes was to cut away the armor at the rear of the fighting compartment to provide clearance for cleaning the howitzer breech and servicing the weapon. The trials were so satisfactory that the first pilot was shipped to the Armored Force Board (AFB) at Fort Knox for trials, which were conducted on February 5–8, 1942. The tests went well and the board judged the design to be far more satisfactory than the T19 and acceptable as the basic weapon for the new armored division artillery units. Before production commenced, the AFB recommended a number of modest changes. The board suggested that it would be better to increase the height of the armor at the front of the superstructure for protection, while at the same time lowering the armor on the side to make it easier to service the howitzer. In addition, the T32 pilot offered traverse of only 15 degrees right and 23 degrees left and the board felt it would be better if the design offered the 45-degree traverse of the normal wheeled carriage. Finally, the AFB wanted a .50cal heavy machine gun added for antiaircraft defense either on a pintle mount at the rear of the vehicle or on a ring mount in one of the forward corners of the fighting compartment.



The T32 105mm HMC pilot was a derivative of the M3 medium tank with a M2A1 howitzer and open casemate. One of the first changes to the design was the elimination of the armor panel at the rear of the fighting compartment that interfered with servicing the gun. (Patton Museum)

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The second T32 pilot was modified at Aberdeen Proving Ground by cutting down the side armor and adding a machine gun ring for vehicle self-defense. This configuration became the basis for the production version. (Patton Museum)

As a result of the AFB recommendations, the second pilot was substantially rebuilt at APG and then shipped off to ALCO (American Locomotive Works) in Schenectady, NY, which had been awarded the initial production contract for the first batch of 600 of the new vehicle. The first production vehicles were completed in March 1942 and shipped to Aberdeen where they arrived on April 6, 1942. The initial tests were so satisfactory that the T32 was type classified as the M7 105mm Howitzer Motor Carriage in April 1942.

M7 105mm HMC evolution

In the haste to place vehicles into production in 1942, a string of small changes was incorporated into the production run on a monthly basis. The first official change was authorized on May 5, 1942, increasing ammunition stowage from 57 to 69 rounds by adding cells for seven rounds on the left side and five on the right, which required the deletion of two folding crew seats in the fighting compartment. The initial production vehicles from April through May 1942 had a rear engine deck similar to the M3 medium tank with a rectangular rear plate and pepper-pot exhausts under the rear overhang. After about 90–100 were built, the engine deck was modified. The two pepper-pot exhaust mufflers on the rear plate were moved above, exiting under the center of the engine deck overhang. The engine air-filters were moved to the outside to make them more accessible for servicing. At the same time, the engine deck was modified by the addition of a pair of openings on the engine deck roof, shielded by armored covers, to help vent any gasoline fumes from the rear compartment.

Many small cosmetic changes took place during the production runs in the summer of 1942. The two wedges on top of the rear stowage bins intended for additional fuel tanks disappeared in early July 1942, after about 200 vehicles had been built. The spring 1942 production batches had used the same E1230 right side differential cover casting as the M3 medium tank, which needed a small step in the upper corner to provide clearance for the 75mm gun sponson mounting. This was not necessary on the M7, so the newer E4151 casting from the M4 medium tank series was substituted in the summer of 1942. The rear sponson stowage boxes were also redesigned in the summer of 1942, with a shift from a side-opening hinged panel to a top-opening bin around August 1942, after about 600 vehicles had been built with the side-opening bins.

This is the first production M7 105mm HMC as seen at APG in April 1942. The configuration of the machine gun pulpit was changed between the pilot and the production vehicle to provide less interference in the fighting compartment. (NARA)

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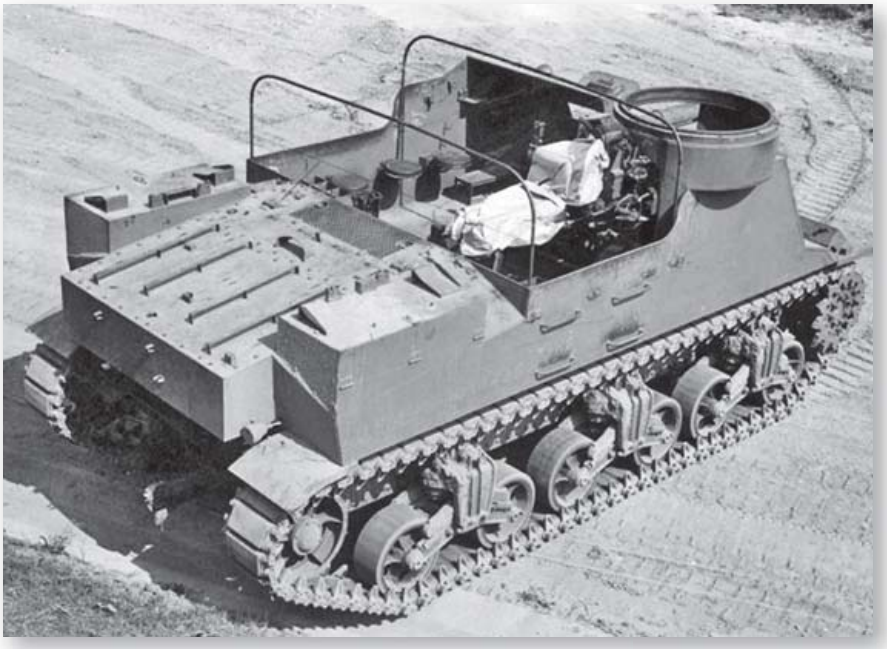
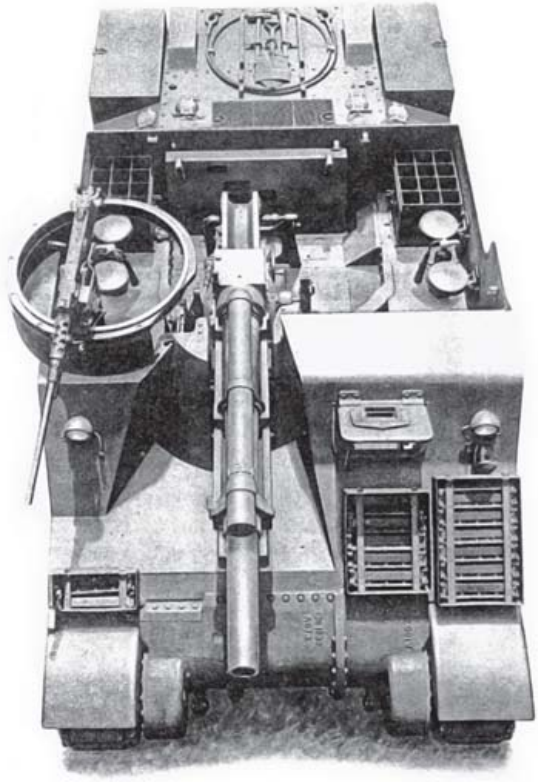


This is a view of an initial production M7 105mm HMC at APG in May 1942. The first series lacked the vent covers over the fuel cells on the engine deck, and also had small wedge skids on top of the rear stowage bins for mounting spare fuel tanks. The engine deck was reconfigured after about 100 vehicles had been built. (NARA)

This overhead view shows an early production M7 105mm HMC from the spring of 1942 with the new vent covers on the rear engine deck. The ammunition stowage is limited still to two 12-round bins and there are two crew seats on either side. The transmission casting in front of the pulpit machine gun mount is the early E1230 from the M3 medium tank with a slight cut-out for the tank's sponson gun. (Patton Museum)

Although the M7 105mm HMC was originally designed on the M3 medium tank chassis, the commonality between M3 and M4 medium tank components made this a moot point by the summer of 1942 since both the M3 and M4 medium tanks shared a common lower hull and power-train with the M7. Owing to the chronology of its production run, the M7 105mm HMC is usually considered a member of the Sherman tank family.

Like the Sherman tank family, the M7 105mm HMC could use a variety of subcomponents and so was compatible with either the original three-piece Iowa transmission or the newer Caterpillar one-piece transmission. These could be distinguished externally since the Iowa transmission had a three-piece bolted differential cover while the Caterpillar transmission had the single-piece cast E4188 cover. Although some M7 105mm HMC manufactured in the summer and autumn of 1942 had the new Caterpillar transmission, there were complaints from the field that the new transmission did not mate properly with the power-train and led to excessive propeller shaft failures. Since the newer Caterpillar transmission was in great demand for M4 medium tank production, the older three-piece Iowa transmission became the preferred option for the M7 105mm HMC and emerged as the predominant type through the 1943 production run.



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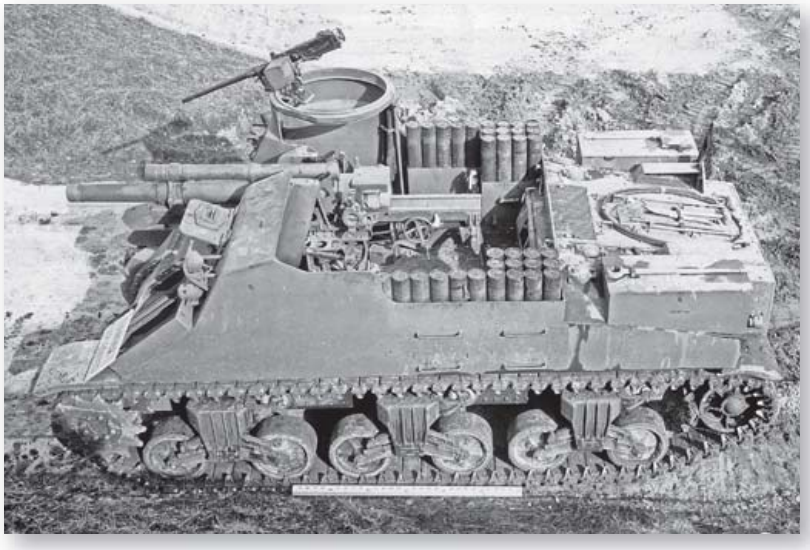
During the late spring of 1942, some M7 were fitted with the one-piece Caterpillar transmission and the one-piece E4188 casting. For a variety of reasons, this transmission became uncommon in the latter half of 1942, and was seldom seen on vehicles manufactured in 1943. Note that this vehicle still has the early sponson box with the folding panel. (Patton Museum)

An M7 105mm HMC, serial 1850, manufactured in December 1942. This was shortly before the deeper pulpit was introduced. Some vehicles produced earlier than this had already been fitted with the armored flaps around the fighting compartment, but this vehicle still lacks this feature. This M7 is fitted with the D47527 heavy-duty bogie assemblies which were used intermittently on the M7 105mm HMC until being standardized in 1944. The rear stowage bin is the intermediate, top-opening configuration.

Combat use of the M7 105mm HMC in North Africa with the British Eighth Army revealed that the ready ammunition racks on the hull side were not adequately protected. As a temporary expedient, units in the Mediterranean theater were authorized to weld additional armor plate along the side to cover the ready racks. In the meantime, a set of folding armor panels was developed to cover the sides and rear of the fighting compartment. These were introduced into the production run in October–December 1942, and were later retrofitted to some older vehicles at depots in the United States before being issued to troops overseas. The pulpit machine gun mount on the right side of the vehicle was modified by extending the sides down to permit the gunner to sit in the bay, and this feature was incorporated into intermediate production vehicles by January 1943.



The M7 gradually absorbed changes being developed for the M4 medium tank series. Following the adoption of the new D47527 heavy-duty bogie assemblies on the tank in 1942, these slowly replaced the older D37893 that had been used on the original M3 medium tank and early Sherman tanks, appearing sporadically from around December 1942. While it is often presumed that new features were added

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sequentially during armored vehicle production, this was not always the case. Most subcomponents were interchangeable, and when a supply of new parts such as the bogie assemblies began to arrive at assembly plants such as ALCO's Schenectady plant, the new parts would sometimes be used even though some of the older components were still available. These older subcomponents would be used eventually on later production vehicles, spoiling the apparent continuity of evolutionary change. In the event, M7 105mm HMC production came to a temporary halt in August 1943 after two production batches of 2,814 vehicles had been completed at ALCO.

After production of the M7 105mm HMC ended at ALCO with the August 1943 deliveries, the demand for the vehicle continued to increase. The export of the M7 105mm HMC through the Lend-Lease program put demands on the limited inventory, as did the US Army's decision to raise additional armored field artillery battalions outside the armored divisions that could be assigned for corps support. As a result, M7 105mm HMC production resumed in March 1944 with a contract extension to ALCO for a further 500 vehicles, starting with serial number 2816. The new production run of the M7 introduced many changes. These vehicles were distinctive as they had the new one-piece E8546 "Mary Ann" transmission cover, revised stowage, sand shields, and modified sponson stowage boxes with a basket added to the top and vents on the outer sides. The heavy-duty bogie was standard on all of these 1944 vehicles. Production of these 500 vehicles took place in March–October 1944.

Since the US Army preferred the M4A3 medium tank with its associated Ford GAA engine, a decision was made to manufacture a second new production run with this engine as the M7B1 and the contract was issued to

This is a typical example M7 105mm HMC manufactured in July 1943. It has the deeper pulpit which was extended downward during January 1943 production. It also has the factory-fitted armored flaps on the side to protect the ammunition racks. The three-piece transmission housing was reintroduced in the late summer of 1942, but was the configuration used on the M4 medium tank with the E4151 transmission cover on the right side, which was a mirror image of the E1231 casting on the left. This vehicle still has the original D37893 bogie as seen on the M3 and early M4 medium tanks. The armored cover over the recuperator was not a standard fit.

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This rear view of the same intermediate production M7 105mm HMC (registration number 4039645) shows the characteristics of this series, including the factory-fitted armored flaps around the fighting compartment to protect the ammunition.

the Pressed Steel Car Company. The M7B1 was essentially similar to the ALCO M7 1944 production version except for the Ford GAA engine and the other details associated with this powerplant such as the engine deck and rear hull configuration. The first 25 Pressed Steel M7B1 were delivered in March 1944 and two contract batches were authorized, for a total of 826 Pressed Steel M7B1 through February 1945.

For reasons that remain something of a mystery, in early 1945 the US Army contracted a final production batch of M7 105mm HMC. Because of ALCO's commitments, the contract was issued to the Federal Machine & Welder Company. The first Federal Machine vehicles were delivered in March 1945 and a total of 176 were delivered in 1945 before the contract was prematurely canceled, making this by far the rarest version of the family.

One of the few M7 variants to see combat was an expedient mount for the British Petroleum Warfare Division's 9.75in incendiary mortar. This weapon fired a large white phosphorus incendiary or high-explosive projectile. Three of these were deployed in the European Theater of Operations (ETO), two with the 180th Infantry Cannon Company, 45th Division of the Seventh US Army, and one with the 121st Infantry Cannon Company, 8th Division of the First US Army. They saw their combat debut in March 1945 and were used through the end of the war on an experimental basis. There was some interest in the weapon in the Pacific theater as a means for reinforcing the infantry cannon companies during attacks on Japanese reverse slope defenses, but the end of the war meant that no more were issued to troops.

M7 105mm HMC production by registration number blocks

Manufacturer	Contract	Quantity	Start	End	Acceptance dates
ALCO	T-3529	599	3034235	3034833	Apr–Sep 42
ALCO	T-3882	2,214	4037519	4039732	Sep 42–Aug 43
ALCO	T-3882	500	4039733	4040232	Mar–Oct 44
Pressed Steel	T-10154	628	40152252	40152879	Mar–Dec 44
Pressed Steel	T-10813	198	40172420	40172617	Dec 44–Feb 45
Federal M&W	T-15511	176	40185472	40185647	Mar–Jul 45

A

PRIEST 105MM SP, 11TH (HONOURABLE ARTILLERY COMPANY) REGIMENT, ROYAL HORSE ARTILLERY, EL ALAMEIN, OCTOBER 1942

When originally received in the autumn of 1942, the Priests were rebuilt in Egypt with British desert fittings including sand-shields, and repainted in the standard light stone color. As an official camouflage pattern was not available for Priest camouflage, the 11 HAC improvised with a scheme of Camcolour brown on the upper edges and black on the lower edges. This vehicle carries the A Battery marking, a triangle bisected in the usual Royal Artillery colors with red to the front. Inside is the H marking of D Troop (Gun 7= G, Gun 8= H). On the front is the arm-of-service (AoS) marking (white 77 on Royal Artillery red/blue square) along with the 1st Armoured Division rhino insignia. In the background is a Stuart OP tank of A Battery, 11 HAC.

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This is a good example of a late-production M7 105mm HMC from the final ALCO production batch built in 1944. It has the heavy-duty vertical volute suspension with the one-piece return roller arms, late-style headlight and grouser box fittings, and the late-style rear sponson boxes with the basket on the top.

Operation of the M7 105mm HMC

The M7 105mm HMC had a crew of eight consisting of a chief-of-section, gunner, assistant gunner (also known as No. 1), four cannoneers numbered 2 through 5, and the motor carriage driver.

The **chief-of-section** was a non-commissioned officer and, as the title implies, commanded the section. During the firing of the howitzer, the chief-of-section stood behind the gunner on the left side of the howitzer; during travel he would stand behind the driver.

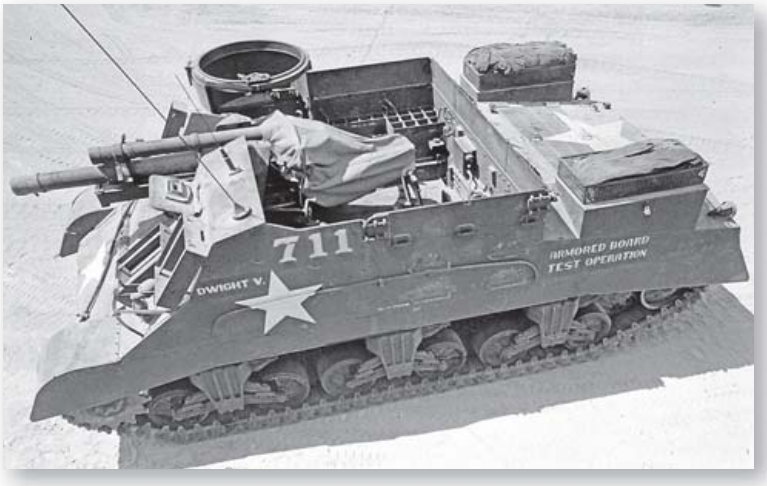
The **gunner** sat on a small seat located on the left side of the howitzer and was responsible for setting the deflection and laying the howitzer for direction (traverse) based on the instruction from the chief-of-section.

The **assistant gunner** sat or stood on the right side of the howitzer in the heavy-machine gun pulpit. During combat action, the assistant gunner was responsible for laying the howitzer elevation, operating the breech, and firing the howitzer by means of a lanyard located on the right side of the howitzer. During travel, the assistant gunner manned the .50cal heavy machine gun.

Cannoneer No. 2 stood on the right side of the howitzer behind the gunner and chief-of-section, and was responsible for loading the howitzer.

Cannoneer No. 3 was stationed in the far right corner of the fighting compartment and operated the fuze setter to prepare the ammunition for firing.

The M2A1 105mm howitzer used semi-fixed ammunition, meaning that the round was a single piece, but the brass propellant casing was not fixed to the projectile. Instead, the



The M7B1 105mm HMC can be distinguished from the late-production M7 105mm HMC by the rear hull, which has a different engine deck that extends back further than on the M7 105mm HMC. Another difference is the engine grating on the upper engine deck. This test example with the Armored Board at Fort Knox is also curious because it is fitted with two radios; US AFAB did not usually deploy radios on their HMC. (Patton Museum)

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This rear view of a M7B1 105mm HMC shows the characteristic features of the M4A3 tank hull on which it was based, including the angled rear plate and the standard D50260 exhaust deflector.

casing could be separated from the projectile so that **Cannoneer No. 4** could select the numbers of bag charges (increments) inside the brass cartridge casing depending on range. The 105mm ammunition employed a base charge and six increments for a total of seven; only the bag charge would be used for close range while all seven increments would be used when firing at maximum range. Cannoneer No. 4 stood on the left rear side of the howitzer during firing.

Cannoneer No. 5 was responsible for removing the 105mm rounds from their containers. The 105mm ammunition could be delivered in various types of transport containers, including wooden boxes, but the rounds were generally left packed in their basic fiber-board tubes in the ammunition racks on either side of the fighting compartment until use. Cannoneer No. 5 stood in the far right rear corner of the fighting compartment, but in the event that the HMC was using ammunition removed directly from wooden boxes, he would sometimes stand outside the vehicle on the right side, and hand the rounds up to Cannoneer No. 4.

The **driver** was stationed in the lower left front of the hull during travel. When the HMC came to a rest for firing, the chief-of-section could instruct him to remain in the driver's seat should the vehicle have to be moved. In the event that the HMC was likely to remain stationary for a prolonged period, the chief-of-section would instruct the driver to assist the cannoneers. Most often, the driver would be stationed on the right side of the HMC to assist Cannoneer No. 5 unpacking ammunition from boxes.

M7 105mm HMC unit organization

The armored field artillery battalion included three HMC batteries plus the associated headquarters and service elements. The essential combat formation for the M7 105mm HMC was the battery; each battery had six M7 105mm HMC for a total of 18 in each battalion. The battery's other armored vehicles included seven M3 half-tracks: two in the battery headquarters used by the battery commander and the maintenance section, two in the battery fire control section, two as ammo carriers in the ammunition section, and one in the reconnaissance section. The armored field artillery battalion usually deployed and fought together as a unit, but it was also possible to detach

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The final production series of the M7 105mm HMC was manufactured by Federal Machine & Welder Company. These were similar to the late-production ALCO M7 except that they were built with the bogies spaced out from the hull to accommodate extended end connectors, a configuration sometimes dubbed the "E9" configuration. This is the sixth production vehicle (40190389) accepted in March 1945. (Richard Stickland collection)

individual batteries for missions, for example to send a battery as part of a battalion-sized task force including a tank company and two armored infantry companies.

Prior to opening fire, the battery would deploy in a gun-line with all six M7 105mm HMC parallel to one another. The spacing between the M7 105mm HMC depended on the situation and the terrain. The individual howitzers were generally spaced far enough apart to avoid the muzzle-blast interfering with the neighboring vehicle, but with the vehicles close enough together to facilitate communication.

It will be noticed that the M7 105mm HMC in US Army service lacked a radio; British practice in contrast was to fit a No. 19 radio set to all of its Priest 105mm SP. The US Army practice was to rely on wire connections within the battery whenever the time and circumstances permitted. Fire direction instructions would usually come by radio from the battalion fire direction center to the battery command half-track via its SCR-506/SCR-508 radio. These instructions would be communicated to the command half-tracks in the battery's fire control section which would then pass them on by field telephone to the individual HMC or via voice message by the battery executive officer. The battery's fire control section had two radio-equipped M3 half-tracks. This allowed the battery to be deployed as a "split battery" if necessary with each part of the battery being directed from one of the half-tracks. When time permitted, field telephone wire would be laid between the fire direction section and the individual M7 105mm HMC and instructions would be passed along the gun-line via field telephone.

One of the differences between the armored field artillery battalions and the towed field artillery battalions was that the AFAB had an organic forward observer capability. The AFAB headquarters battery had an observation, reconnaissance and liaison platoon which included three M4 medium tanks. These tanks were deployed with the unit that the AFAB was supporting. A typical mission would have the AFAB attached to one of the armored division's combat commands. In turn, the combat command would deploy two or three task forces consisting of a varied mixture of tank, armored infantry, and armored engineer companies. So, each of the three tanks would be attached to a task force. During the mission, the forward observer tank could communicate back to the AFAB fire direction center for coordinated fire from multiple batteries. In other cases, it could directly control a single battery via the battery's fire direction section.

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In total, the US Army eventually deployed 67 M7 armored field artillery battalions, of which 48 served in the armored divisions and 19 were non-divisional. Besides their use in the AFAB, the M7 105mm HMC were used in infantry regiments' cannon companies. During late 1943 and early 1944, they were also assigned on an expedient basis to US army tank battalions as assault guns until the M4 (105mm) assault gun became available later in the summer of 1944.

Feeding the M7: ammunition trailers

Because of their high consumption of ammunition in battle, field artillery pieces have traditionally been accompanied by caissons to carry additional rounds. With the advent of self-propelled artillery in World War II, there was the additional issue of how to supply ammunition since conventional trucks could not keep up with tracked vehicles in cross-country travel. Under the March 1942 TO&E, each 105mm HMC battery included six M7 105mm HMC each towing a 1-ton ammo and fuel trailer, and these were supported by six M3 half-tracks, also towing a 1-ton trailer. The expedient use of ordinary cargo trailers was due to the delay in production of dedicated field artillery caissons. Although development of both an armored and unarmored caisson had begun in 1941, none were available until late in 1942. The first to appear was the M8 armored trailer, and these were substituted for the expedient 1-ton trailer in the March 1943 TO&E. The M8 armored trailer could carry 42 rounds of 105mm ammunition and weighed 5,060lb fully loaded. It was standardized in September 1942 and 5,270 were manufactured in 1942–43.

The unarmored ammunition trailer took longer to develop and was finally accepted for production in April 1943 as the M10 ammunition trailer. The M10 trailer carried about the same amount of ammunition as the M8, but was more versatile since it had an open top and had more volume for other types of supplies. M10 production began in 1944 and over 7,000 were manufactured. The M8 armored trailer was classified as "limited standard" in November 1943 once the new M10 ammunition trailer was available. The September 1943

This is one of the M7 expedient mounts for the British Petroleum Warfare Division 9.75in chemical mortar seen here being demonstrated to a delegation of the US 6th Army Group and Seventh US Army at Benny, France on February 28, 1945. Only three of these were deployed in combat later in 1945. (NARA)

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TO&E introduced many changes to ammunition supply in the HMC battery based on the lessons of the Tunisian campaign. The allotment of one half-track to each HMC for ammunition supply was found to be excessive. As a result, the number of ammunition half-tracks in each battery was reduced from six to two, and the remaining two M3 ammunition half-tracks were assigned to a separate ammunition section. Consequently there were eight M10 ammunition trailers assigned to each HMC battery, one each for the M7 105mm HMC, and two more for the half-tracks in the ammunition section. In practice, some batteries continued to use the M8 armored trailer in 1944–45.

COMBAT USE

M7 105mm HMC: North African and Mediterranean theaters

On June 21, 1942, while in the Oval Office of the White House at a strategy meeting with President Roosevelt, Winston Churchill was informed that the garrison at Tobruk had finally fallen to the onslaught of Rommel's Afrika Korps. "What can we do to help?" Roosevelt asked. Churchill replied that British forces in North Africa were badly in need of the new Sherman tank. Roosevelt agreed to send these, along with the new M7 105mm HMC.

The emergency request for the M7 105mm HMC was intended to solve a tactical dilemma confronting British tank formations fighting the Afrika Korps. The Germans skillfully used 88mm Flak guns at very long ranges to hammer British tank formations long before their tank guns could strike back. A self-propelled gun could advance behind the tanks and deal with the 88mm menace at long ranges with an effective high-explosive projectile. The first M7 105mm HMC arrived in Suez on September 3, 1942, followed by about 100 more by the end of the month. The M7 105mm HMC was code-named Priest, based on its distinctive machine-gun "pulpit." The Priests received a number of British modifications prior to being issued to troops. The grouser stowage boxes on the hull front were removed as being

B

1: M7 105MM HMC, CANNON COMPANY, 34TH DIVISION, RABAT, MOROCCO, DECEMBER 1942

After the Operation *Torch* landings in November 1942, the cannon companies sometimes had pattern-painted camouflage added, in this case engineer color No. 3 Sand over the usual lusterless olive drab. Markings at this stage of the war were fairly elementary as the usual bumper code system was only intermittently applied. The air identification marking for *Torch*, a white star in a blue circle, was carried on the engine deck.

2: PRIEST 105MM SP, 1ST ROYAL HORSE ARTILLERY, 9TH ARMOURED BRIGADE GROUP, SYRIA, APRIL 1943

This Priest shows a number of the changes introduced in Tunisia, including the hemp rope wrapping around the recuperator and the armored panels added over the side. The color scheme is a bit of a mystery. The GHQ MEF introduced a new disruptive painting scheme (Cam Drawing No. A/191) in April 1943, which seems to be the intention on this vehicle. However, the photographic evidence would suggest that the intended colors of light mud with a disruptive color of Blue-Black SCC 14 were not available and instead, the vehicle retains its original North Africa color of light stone with a pattern possibly of light mud as the main disruptive color, and a thin coat applied over the previous top disruptive color ending up in a dull grey shade. The British air identification symbol was still the RAF roundel as shown in the inset drawing.

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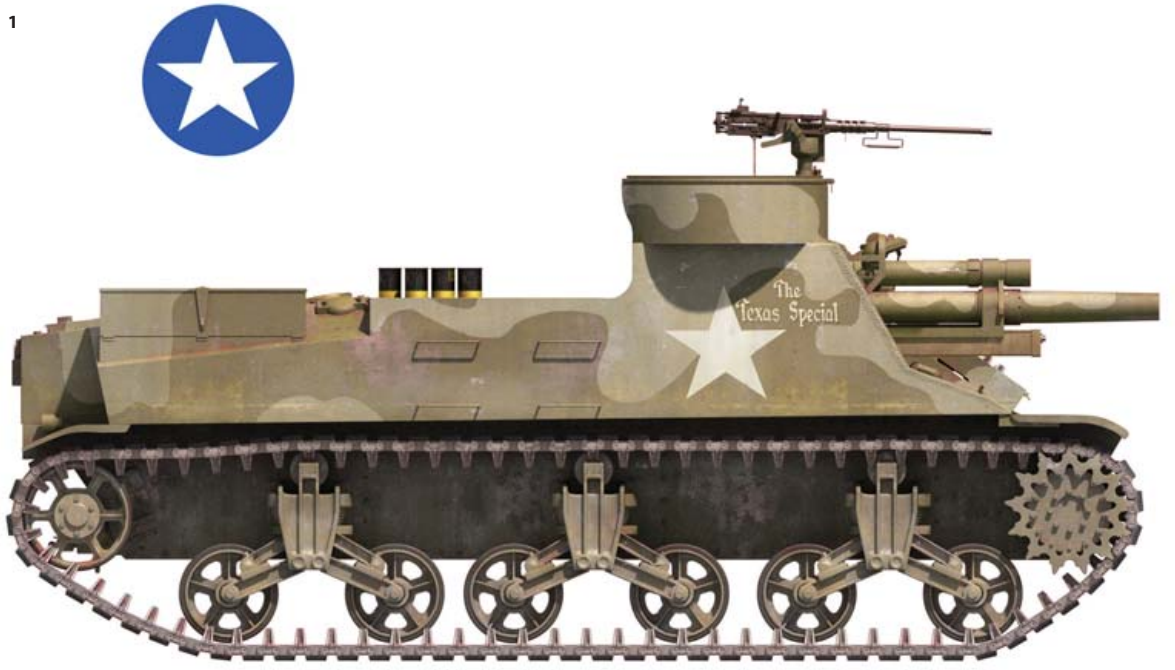

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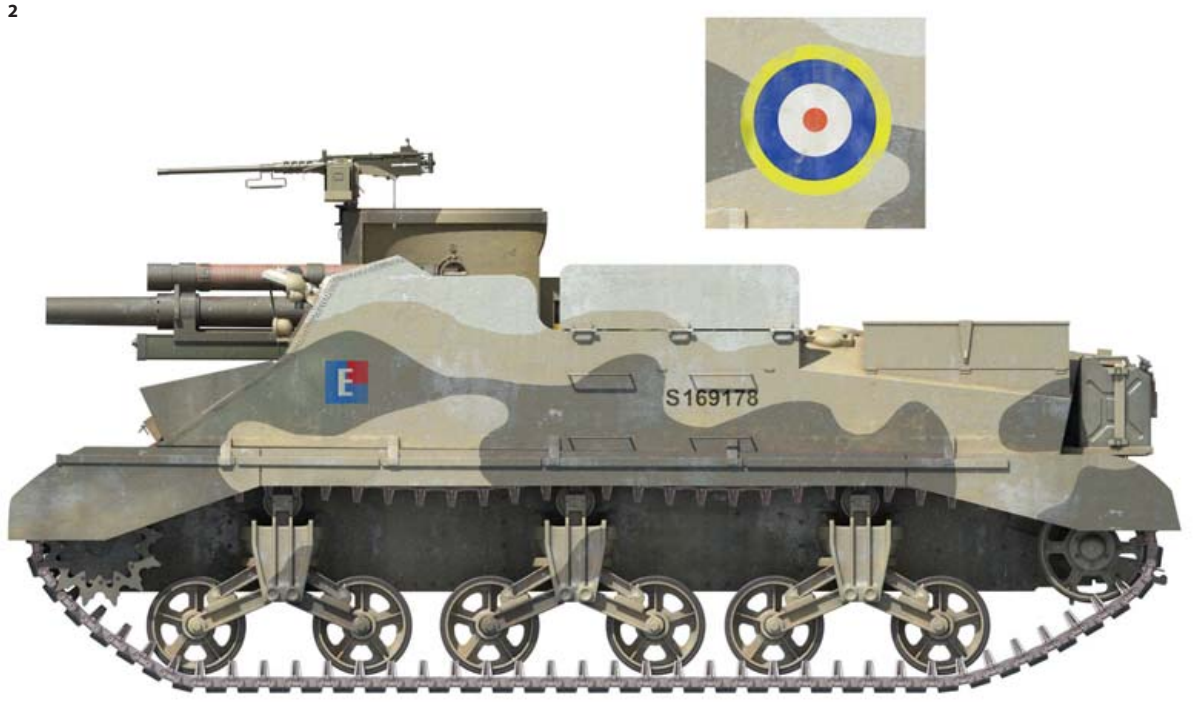

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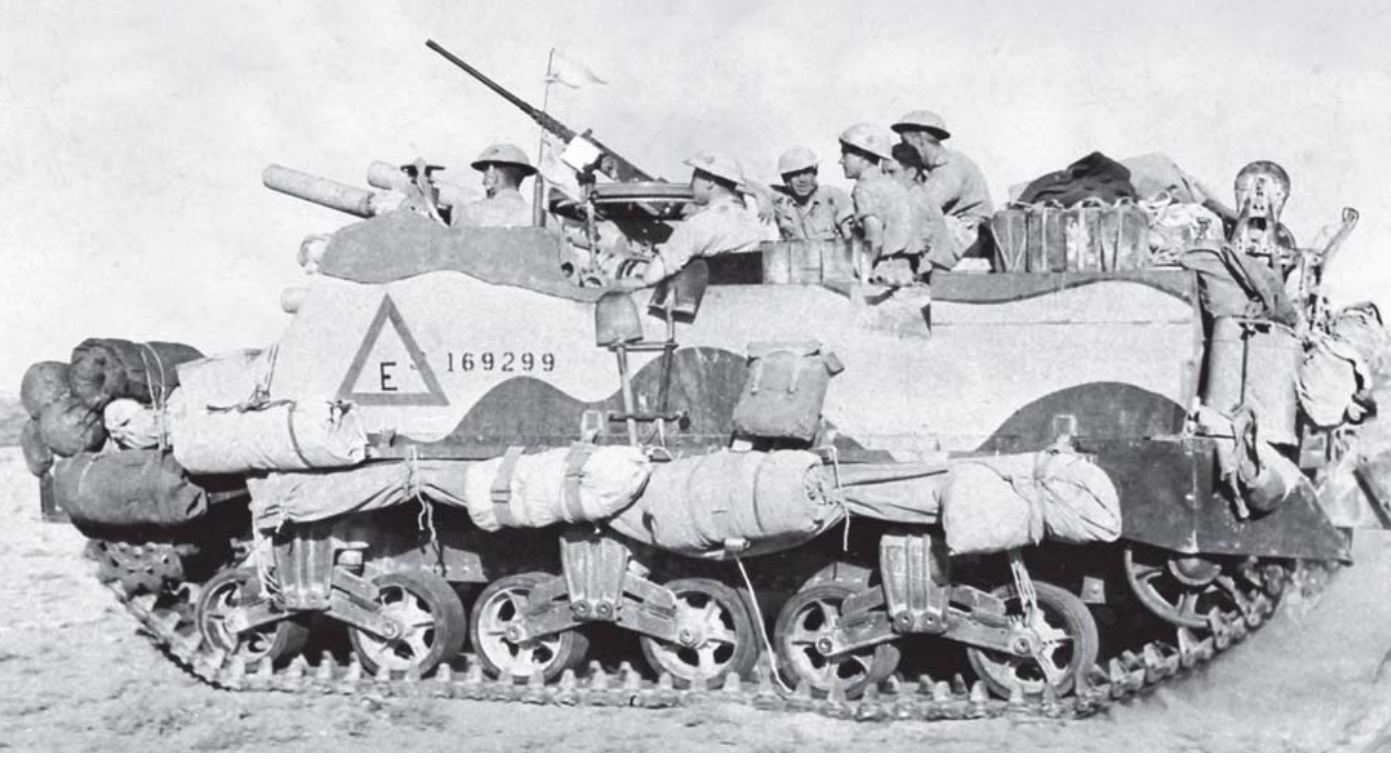

The M7 105mm HMC saw its combat debut with the 11th (Honourable Artillery Company) Regiment, Royal Horse Artillery during the fighting for El Alamein in October 1942. This is the first Priest of D Troop, A Battery, which supported the tanks of The Queen's Bays during the fighting. (Patton Museum)

unnecessary and a new set of sand-shields were added to the side along with rails for Sunshield disguises. In addition, a No. 19 wireless set was added because of the difference between US Army and British radio practice in artillery batteries. This was typically located to the left of the driver on the inner hull side wall.

The first unit equipped was the 11th (Honourable Artillery Company) Regiment, Royal Horse Artillery (RHA). Priest regiments included three batteries, each with two troops with four Priests each for a total of 24 Priests per regiment. The first combat deployment of the Priest took place during the El Alamein battles on October 24, 1942, with 11th HAC Regiment providing a battery each to three armored regiments of the 1st Armoured Division. The War Diary recorded that "the Priests have been behaving extremely well and … with their added protection they could operate well ahead of the towed 25-pounders." A later assessment by the British Army after the El Alamein battles concluded that:

The M7 105mm HMC first saw combat in US service during the Operation *Torch* landings in French North Africa in November 1942. This is an early-production M7 105mm HMC of the Cannon Company, 135th Infantry, 34th Division, which took part in the landings near Algiers as part of the Eastern Task Force.

> for the first time in history, we had a supply of S.P. mountings in support of our armoured formations. The value of these is still the subject of keen argument, but all seem to agree that the 'Priest' or 105mm how. on the Grant chassis was a great success … M.7 very popular with the RAC (Royal Armoured Corps) members of the Brigade Group, and RA

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The M7 105mm HMC was deployed in infantry regiment cannon companies with two M7 in the heavy platoons and two T30 75mm HMC in each of the two light platoons. This is a cannon company of the 34th Division on parade in Rabat, Morocco on 4 July, 1943, celebrating American Independence Day.

> (Royal Artillery) seem also to approve of it. Its chief virtue seems to be that being lighter than the Shermans it is able to keep up with them very well. It gave valuable support for the tanks, which was very much appreciated by their crews. The only criticism was that the round was rather heavy to handle and the smoke poor.

The success of the Priests in the El Alamein fighting led to the decision to equip one artillery regiment in each armored division with self-propelled artillery.

The initial combat use of the Priest led to a variety of modifications. British artillery officers felt that the recuperator casting above the gun tube was too thin and vulnerable to splinter damage. As a result, it was wound with 1.5in hemp rope. The low side armor of the fighting compartment left the ammunition partly exposed. This was improved by adding 14in extensions and a hinged rear panel. Most Priests were fitted with a No. 1 cable reel for field telephone connections on the left rear of the gun compartment. The Middle East Forces also made other recommendations, including an ammunition hoist, a caisson based on the No. 27 ammunition trailer, and a Homelite generator. Most of these were ignored owing to the recognition that the 25-pounder SP would soon appear.

President Roosevelt's early commitment of the M7 105mm HMC to Britain caused delays in issuing these vehicles to US units earmarked to the Operation *Torch* landings in North Africa in November 1942. As a result, some US artillery units were still employing the expedient T19 105mm HMC, including the three AFAB of the 1st Armored Division. A number of US Army infantry divisions deployed to North Africa had the new M7 105mm HMC in their regimental cannon companies. The heaviest concentration of M7 105mm HMC to serve in Tunisia were the three AFAB of the 5th Armored Field Artillery Group. These new artillery groups were intended to provide mobile fire support for armored corps and typically included three AFAB.

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By the time of Operation *Husky* in July 1943, the M7 105mm HMC had largely replaced the expedient T19 105mm HMC. This is a M7 105mm HMC from the 2nd Armored Division column in Sciacca, Sicily on July 20, 1943. It has already been retrofitted with armor plates on the superstructure sides to provide more protection for the ammunition.

The 5th Armored Field Artillery Group had been spun off the divisional artillery of the new 5th Armored Division, and was re-equipped with the M7 105mm HMC before being dispatched to Tunisia. This group arrived in North Africa in January 1943 and served with the artillery arm of the II Corps. It began moving 1,200 miles from Casablanca to Tunisia in March 1943 and saw its combat debut in the offensive towards Maknassy. Its 58th AFAB supported the 1st Armored Division in the attack on Sened Station on March 19, 1943, and the group took part in continual fighting through the end of the campaign in May.

By the time of Operation *Husky*, the amphibious assault on Sicily in July 1943, the M7 105mm HMC was widely distributed through Patton's Seventh US Army, including the three AFAB of the 2nd Armored Division, various infantry cannon companies, and the 5th Armored Field Artillery Group; the 6th Armored Field Artillery Group was assigned in reserve but did not take part in the fighting. In addition, the British Army deployed the Priest for

C

PRIEST 105MM SP, A TROOP, 55TH FIELD BATTERY (SP), 19TH FIELD REGIMENT (SP), ROYAL CANADIAN ARTILLERY, CANADIAN 3RD INFANTRY DIVISION, NORMANDY, JUNE 1944

The 19th Field Regiment (SP) was one of the first Canadian units to receive the Sexton I, but when deployed overseas it was re-equipped with Priests. After a short stint in Italy, it was directed to England to serve in the Army Group Royal Artillery. It was assigned to support the 3rd Canadian Division for the Normandy campaign. The regiment had the usual "Long Immersion" wading kit added prior to landing at Juno Beach. The crew left the side extensions in place through much of the Normandy fighting as seen here. The regiment also had additional stowage racks added on the front of the vehicle. The markings followed British 1944 practice so the blue square with red square in the upper right corner indicated 1st Battery (55 Bty), the red square in the lower right corner indicated 2nd battery (63 Bty), and the red square in the lower left corner indicated 3rd Battery (99 Bty). The letter/numeral in the square indicates A troop, 4th Gun. The artillery marking is repainted on the front along with the regimental AoS and the 3rd Canadian Division insignia; these were repeated on the rear as well. This particular vehicle had elaborate markings including the name "The Wacky Seven" with the crew names all printed on yellow maple leaves. These markings were carried on both sides of the vehicle. The regiment converted to Sexton IIs in August 1944.

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A Priest of C Troop, Q Battery (392 Bty), 98th (Surrey & Sussex Yeomanry) Field Regiment supporting the 1st Canadian Armoured Brigade during the fighting on the approaches to Florence, Italy, in late June 1944. This has the deepened pulpit on the right side which was introduced into production in January 1943. A side armor flap has been added to protect the ammunition, a British Eighth Army modification rather than a factory fit. (NARA)

corps-level artillery, with the 11th (HAC) Royal Horse Artillery attached to XXX Corps and the 98th Field Regiment attached to XIII Corps on Sicily.

During the subsequent campaign in mainland Italy in 1943–45, the M7 105mm HMC saw US Army service primarily with the three AFAB of the 1st Armored Division, and with a number of infantry regimental cannon companies. The July 1943 infantry regiment TO&E changes removed the self-propelled howitzers from the cannon companies, substituting the towed M3 105mm howitzer. However, US Army practice was to refrain from subjecting forward-deployed units in combat zones to unnecessary reorganization, and a number of infantry regiments in the Mediterranean retained the M7 105mm HMC in the cannon companies. In addition, shortages of the towed M3 105mm howitzer contributed to the delays in switching to towed guns in the infantry regiments. During the landings at Anzio, the 3rd Infantry Division was reinforced with the 69th AFAB, one of the few non-divisional M7 battalions to serve in Italy.

The Priest was the predominant self-propelled gun in British and Commonwealth field regiments in Italy, even after it had been completely replaced by the Sexton in Northwest Europe (NWE). The long-serving 11th (HAC) Royal Horse Artillery went over to the Italian mainland during the Eighth Army landings in Calabria in September 1943 as part of Operation *Baytown*. The 1st Royal Horse Artillery was the next British unit to be equipped with the Priest in January 1943; it landed at Taranto in May 1944 and saw fighting in the subsequent campaigns. The 165th Field Regiment received Priests while serving at the Combined Training Centre in Kabrit.

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The 24th and 98th Field Regiments were converted to the Priest starting in March 1943 and the 12th Royal Horse Artillery and 142nd Field Regiment in the summer of 1943; all eventually served in Italy. The Canadian 8th Field Regiment, Royal Canadian Artillery (RCA) was equipped with the Priest in April 1944 and saw combat in Italy before being transferred to NWE with Sextons in March 1945. The 4/22 Field Regiment of the South African 6th Armoured Division was equipped with the Priest while training in Egypt, and went into action with the division when deployed in Italy in April 1944. At peak strength in the summer of 1944, there were seven British and Commonwealth Priest regiments in Italy. The first batch of Sexton 25-pounders was shipped to the Mediterranean theater in 1943, but it did not begin to appear in any significant numbers in the Italian campaign until the late autumn of 1944. By the end of the campaign in May 1945, there were still several British Priest regiments in Italy.

M7 105mm HMC in the European Theater of Operations 1944–45

During mid-1943, the US Army underwent another reorganization of TO&E based on the lessons of the Tunisia campaign. As mentioned above, the infantry's regimental cannon companies switched from the M7 105mm HMC to towed M3 105mm howitzers. At the time of the D-Day landings in Normandy in June 1944, the M7 105mm HMC was deployed primarily in the AFAB belonging to each US Army armored division, and on an expedient basis in some tank battalions as an assault gun. Two non-divisional M7 battalions were attached to V Corps for the Omaha Beach landings, and were trained to fire on the approach to the beach from their LCT (Landing Craft Tank).

For the D-Day landings in Normandy, the British and Canadian assault divisions were reinforced with self-propelled artillery regiments. This is a column of Priests of the Canadian 14th Field Regiment RCA preparing their vehicle for loading on LCTs near Gosport on June 1, 1944. The Priests have been fitted with the elaborate deep wading kit for the landing, which included the stacks at the rear for the engine, and an elaborate parapet around the fighting compartment. This unit supported the 3rd Canadian Infantry Division at Juno Beach. (LAC)

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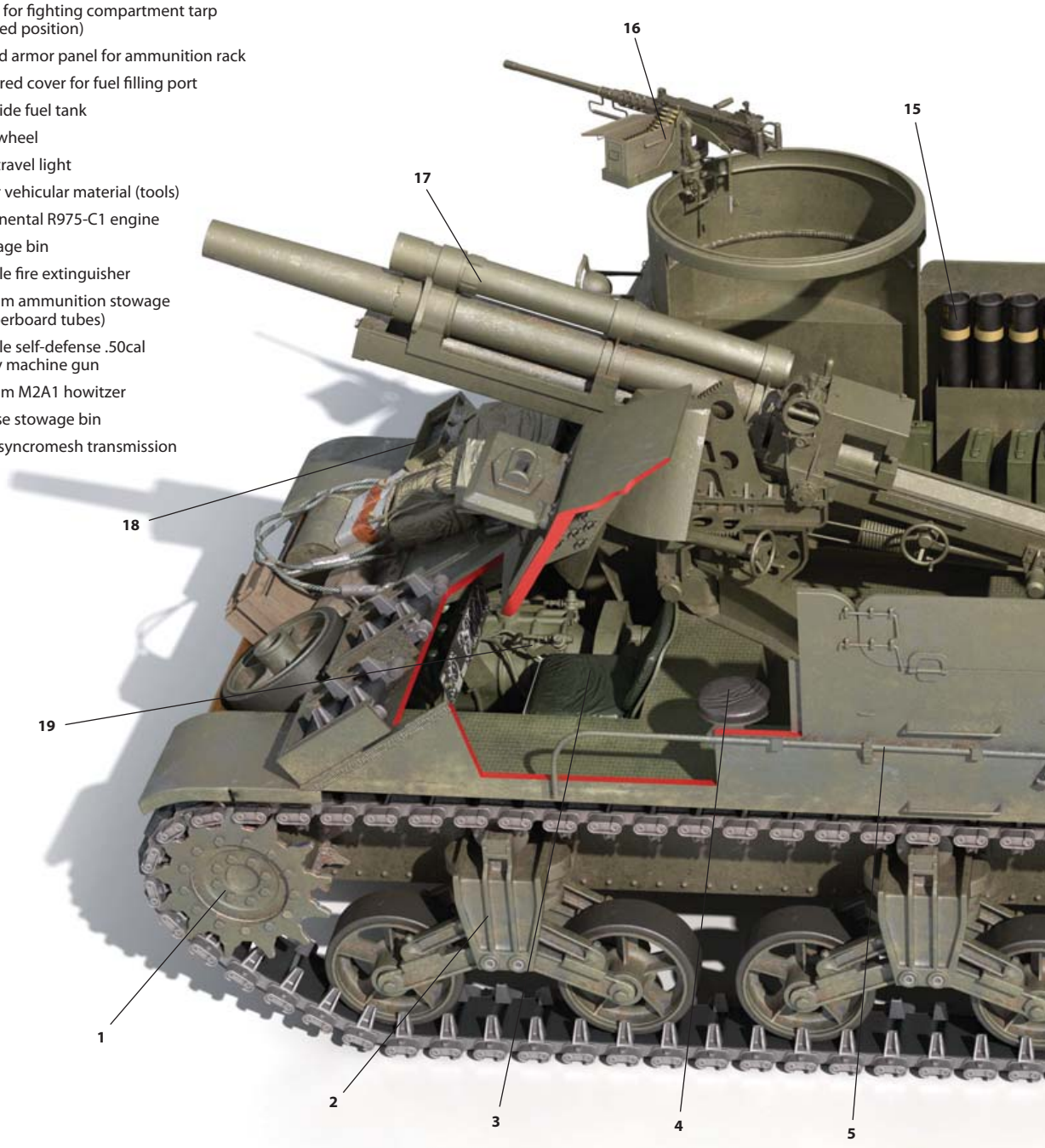
Key

1. Drive sprocket
2. Suspension bogie assembly
3. Driver's station
4. Gunner's seat
5. Hoop for fighting compartment tarp (stowed position)
6. Added armor panel for ammunition rack
7. Armored cover for fuel filling port
8. Left-side fuel tank
9. Idler wheel
10. Rear travel light
11. Outer vehicular material (tools)
12. Continental R975-C1 engine
13. Stowage bin
14. Vehicle fire extinguisher
15. 105mm ammunition stowage (in fiberboard tubes)
16. Vehicle self-defense .50cal heavy machine gun
17. 105mm M2A1 howitzer
18. Grouse stowage bin
19. Iowa syncromesh transmission



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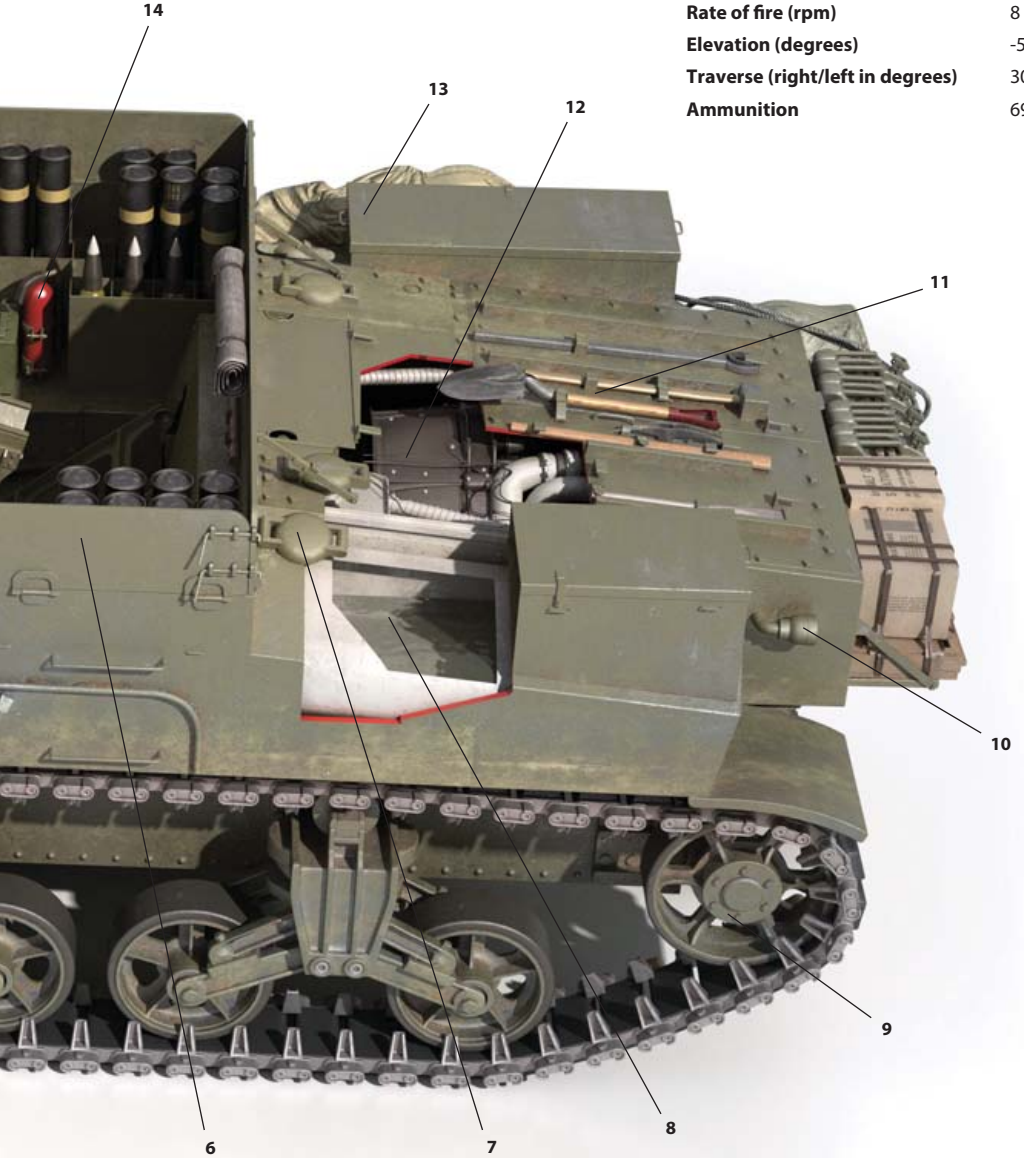
Specifications	
Crew	7
Combat weight (tons)	25.3
Length (ft)	19.7
Height (ft)	9.6
Width (ft)	8.6
Max. speed (mph)	24
Range (miles)	125
Fuel capacity (gal)	175
Engine	R975 C1
Engine	Continental R975 C1 radial 340 hp 9-cylinder gasoline engine
Transmission	Syncromesh transmission with five forward, one reverse gear
Armament	105mm M2A1 howitzer
HE projectile weight (lb)	33
Range (yards)	12,205
Rate of fire (rpm)	8
Elevation (degrees)	-5/+35
Traverse (right/left in degrees)	30/15
Ammunition	69 onboard +45 in M10 trailer



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Another example of a M7 105mm HMC prepared for the Normandy landings, in this case "Big Chief III" (4039530) of B Battery, 62nd AFAB, in Portland harbor on June 1, 1944. The deep wading kit is similar but not identical to the British style. This battalion supported the 16th Infantry Combat Team, 1st Infantry Division on Omaha Beach and lost two M7 on D-Day, one at sea and one to a mine after landing. (NARA)

Of the 67 armored field artillery battalions with the M7 105mm HMC during World War II, 62 served in the ETO: 48 in the armored divisions and 14 non-divisional battalions. Like most artillery weapons, combat losses were less severe than tank losses. So for example in the 6th Armored Division, 69 percent of the M7 105mm HMC that landed with the division in France in 1944 were still in use at the end of the war in May 1945; in contrast, only four percent of the original M4 medium tanks were still in service. M7 105mm HMC losses in the ETO were 240 vehicles, with the heaviest losses during the Battle of the Bulge in December 1944–January 1945. The M7 105mm HMC proved to be an entirely satisfactory vehicle in service, combining an excellent field gun with a durable and reliable chassis.

Britain received 832 Priest 105mm SP during the war via Lend-Lease, 497 in 1942, and 285 in 1943 as detailed in the chart below. From the British perspective, the main problem posed by the Priest was the incompatibility of the 105mm ammunition with the 25-pounder ammunition that was otherwise standard with the Royal Artillery. As will be detailed below, the adoption of the Sexton 25-pounder SP in 1943 was intended to remedy this problem and so deliveries of the Priest ended in 1943.

Prior to the Normandy landings in June 1944, five field regiments of the British, Canadian, and Polish armored divisions had been equipped with the Sexton 25-pounder and three regiments deployed in corps artillery had also been fielded, totaling 192 Sextons. The 21st Army Group still had 168 Priests in seven regiments immediately prior to the invasion. Instead of

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being used in the armored divisions, these Priests were used to reinforce the assaulting infantry divisions. The Canadian 3rd Infantry Division on Juno Beach had four Priest regiments and the British 3rd Division on Sword Beach had three. The third assault division, the 50th Northumbrian Division, was reinforced with Sexton regiments. These seven Priest regiments remained in support of the divisions during the Normandy fighting through the end of July. During August 1944, the field regiments in the infantry divisions reverted back to normal towed 25-pounder regiments except for a single corps-level Canadian regiment which converted to Sextons. The Priests were withdrawn from service in the 21st Army Group by the end of July. As detailed below, the surplus Canadian Priests were recycled as Kangaroo armored personnel carriers.

Aside from Britain, the only major recipient of the M7 105mm HMC was France, which received 283 directly through Lend-Lease. These were used to equip the four armored divisions raised with US assistance during the war. The French armored divisions (*divisions blindées*) were organized along American lines with some modest differences. One organizational issue was that the French armored field artillery battalions retained traditional French unit designations as artillery regiments, even though they followed the US AFAB tables of organization. The French M7 105mm HMC first saw combat with the 2e Division Blindée in France in August 1944. Besides the direct Lend-Lease shipments, a small number of additional vehicles were transferred by the US 6th Army Group to units of the French 1st Army (1e Armée) under their command to make up for combat attrition.

The M7B1 105mm HMC entered production relatively late and so was not as commonly seen in the ETO as the more common M7 variants. This M7B1 battery is moving towards a burning German town in April 1945. The M7B1 can be distinguished by the longer hull sides and by the rear plate with exhaust deflector below. Although the AFAB had been authorized the newer M10 ammunition trailers, many units such as this one were still using the older M8 armored ammunition trailers. (NARA)

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By way of comparison with the extensive Allied use of self-propelled artillery in the armored divisions, the German Army in Normandy in June 1944 had barely 60 Wespe 10.5cm l.FH 18/2 in Panzer divisions. The Wespe was the closest German equivalent to the Priest/Sexton and was inferior in most respects since it was based on the PzKpfw II light tank chassis. So it had a small fighting compartment, and stowed only 32 rounds of ammunition. Only 676 were produced during the war, and the Panzer divisions were forced to rely primarily on towed artillery.

US Army M7 105mm HMC combat strength/losses in the ETO June 1944–May 1945

Month*	6-44	7	8	9	10	11	12	1-45	2	3	4	5
Strength	489	601	679	663	693	959	1,123	1,173	999	1,206	1,026	1,026
Losses	18	5	14	23	11	3	105	0	0	7	32	22

* Data as of the 20th of each month

M7 Priest 105mm HMC delivery to UK

Date	II/42	III/42	IV/42	I/43	II/43	III/43	IV/43	Total
Deliveries	22	181	294	50	140	111	34	832

E

1: SEXTON 25-POUNDER, A TROOP, 1ST MOTORIZED ARTILLERY REGIMENT, POLISH 1ST ARMORED DIVISION, NETHERLANDS, NOVEMBER 1944

The Polish 1st Motorized Artillery Regiment (1.pam: 1 pulk artylerii motorwej) was one of the first field artillery regiments in the UK to be equipped with the Sexton, and ended up with a number of early production vehicles. This particular vehicle, the 3rd Gun of A Troop, came from the January–February 1944 production batch. Although this production series was supposed to be fitted with the CDP track, in fact many vehicles remained fitted with the T54E1 track as seen here. This Sexton is in the usual overall olive drab, with a camouflage pattern of brown, possibly SCC 2. This appears to be a simplified attempt to mimic the Military Training Pamphlet No. 46 ("Mickey Mouse") scheme using the contemporary olive drab base color. The markings follow the British pattern with the usual Royal Artillery marking identifying the vehicle as the 3rd Gun, 1st Battery, A Troop on both the front and sides. Likewise the arm-of-service marking is in the usual Royal Artillery fashion (74 blue/red); it was carried on the lower left side of the fighting compartment and on the rear. The divisional insignia, the Polish winged hussar emblem, was also carried on the front and rear and is shown in the inset drawings both in detail and on the lower right corner of the front of the fighting compartment. On the upper right corner is the Death-head (*Trupia glowka*) insignia of the 1.pam. This insignia can be traced back to the battle of Dytiztyn on September 16, 1920, when Capt Adam Zajac's 4th Battery, 1st Mountain Artillery (1.pag – *pulk artylerii gorskiej*) sacrificed itself as a rearguard to shield the retreat of the 8th Infantry Division against a Bolshevik Cossack cavalry division, in what was memorialized as the "Polish Thermopylae." The "Death Battery" insignia was transferred in 1931 when 1.pag was reorganized as the 1st Motorized Artillery Regiment (1.pam), a unit that fought in Poland in 1939, and was subsequently reconstituted in France in 1940 and in the UK in 1941. The chalked marking on the hull rear is probably a maintenance marking.

2: M7 105MM HMC, 2E BATTERIE DE TIR, 40E RÉGIMENT D'ARTILLERIE NORD-AFRICAINE, 2E DIVISION BLINDÉE, ALSACE, JANUARY 1945

The French 2e DB (2nd Armored Division) had its own set of markings, distinct from those of the neighboring 1e Armée. The divisional marking was the Cross of Lorraine superimposed on a map of France on a blue roundel. The divisional artillery regiments had a yellow A superimposed on a blue square; 3e RAC had no vertical bars; 64e RADB had a vertical bar to the left of the A, 40e RANA had vertical bars on both sides of the A. The horizontal bar with two pips indicated the 2nd Battery. This particular vehicle, 4e Pièce, 2e Section de tir (4th Gun, 2nd Firing Section) was originally named "El Moghrabi," but it was renamed as "MdL Delauzun" after its first commander, Marechal des Logis Delauzun, was killed in action on August 11, 1944. During the fighting in Alsace in January 1944, a coat of whitewash was applied over the usual olive drab. It is seen here with its usual M8 armored ammunition trailer in tow.

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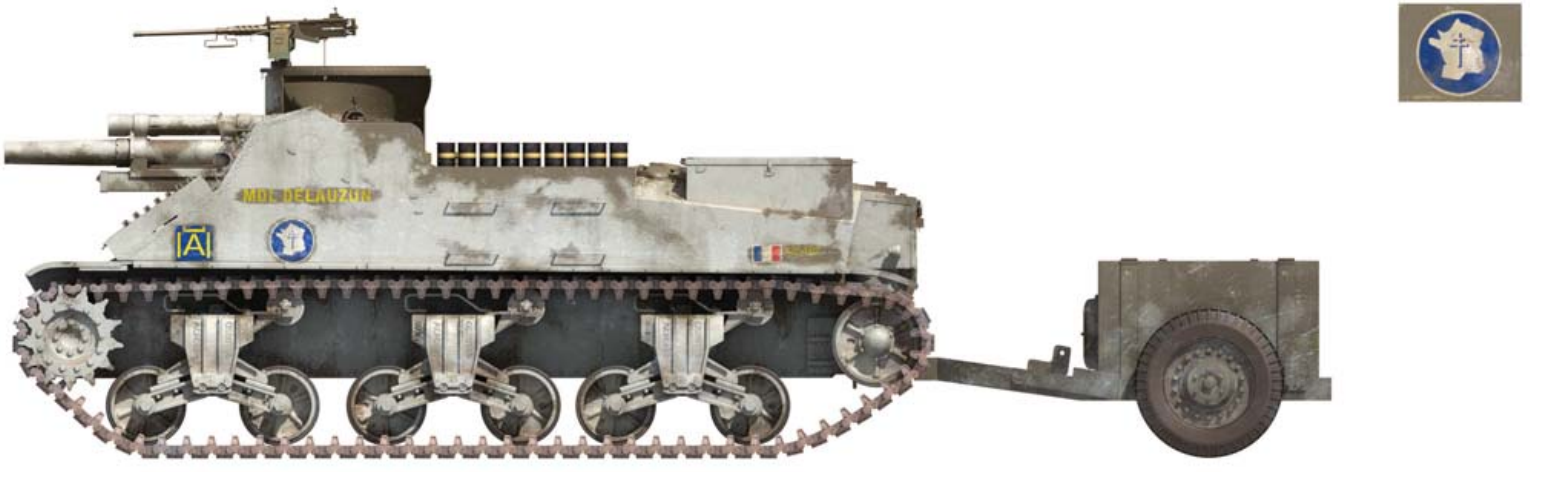

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Following the retirement of the Priests from Canadian service, the redundant vehicles were hastily converted to improvised Kangaroo armored personnel carriers for Operation *Totalize*. The opening for the howitzer was plated over with two layers of mild steel with the gap in between filled with sand. This shows the troops of the 4th Infantry Brigade, 2nd Canadian Division loaded up on their Kangaroos on the afternoon of August 7, 1944, before the attack the following day. The Kangaroos still show the markings of their original owners, the 13th Field Regiment RCA. (LAC PA-129172)

Unfrocked Priests

One of the more curious offshoots of the retirement of the Priests in Normandy in August 1944 was the reconfiguration of the surplus Priests from the Canadian field regiments as "unfrocked Priests," also known by their codename as Kangaroos. In late July 1944, the commander of the Canadian II Corps, Lt Gen Guy Simonds, indicated the need for a "bullet-proof and splinter-proof vehicle" to carry assault infantry in the forthcoming Operation *Totalize* breakthrough attempt south of Caen. He estimated that 60 vehicles would be needed, 30 for each of the two divisions taking part. The task was handed over to the Canadian Army Workshop Detachment (AWD) on the evening of July 31,1944, with the requirement to complete as many as possible by the night of August 5, 1944. The 105mm howitzer was removed along with its mount, ammunition racks, and other fittings in the fighting compartment. The "AWD Kangaroo" set up its field workshops near Bayeux. A local depot of "W crocks" (worn out AFVs) was scoured for armor plate, and after that ran out, steel plate was obtained from the Schneider steel mill near Caen and from derelict landing craft on the Normandy beaches. The plan was to blank over the howitzer opening in the front of the superstructure. During the course of the conversion work, it was realized that some of the mild steel that was being used did not offer enough ballistic protection, so the design was revised. The opening in the hull front was covered with two layers of mild steel, one on the outside and one on the inside, and the gap in between the plates was filled with sand. The "unfrocked Priests" had a crew of one, the driver, and were designed to accommodate ten

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fully equipped infantrymen. On August 6, units of the 2nd Canadian Infantry Brigade and 51st Highland Infantry Brigade were trained in mounting and dismounting from the vehicles. The tactics for the Kangaroos were to penetrate through German defenses and then "de-bus" once deep behind the forward battle-lines. About 72 "unfrocked Priests" were converted by the morning of August 6, 1944, after frantic work by some 14 Canadian and British units.

The use of the Kangaroos on August 8, 1944, was judged a great success. Not only did they help penetrate the German defenses, but infantry casualties in the mounted units were considerably lower than those on foot. In the six Canadian battalions involved in the fighting, the three Kangaroo units had casualties of seven killed and 53 wounded versus 38 killed and 68 wounded in the three conventional units. The success of the Kangaroos led to the creation of the 1st Canadian Armoured Personnel Carrier Squadron on August 28, 1944, attached to the Elgin Regiment. At the time, the unit still had about 55 "unfrocked Priests" operational. The squadron saw considerable action over the next several weeks in assaults on the fortified ports along the Channel coast, starting with Operation *Astonia* against Le Havre on September 10, 1944. The Kangaroos proved to be quite successful, but at the same time the vehicles were mechanically exhausted. There were more than 500 Canadian Ram tanks idle at depots in Britain, so plans began to convert them to turretless Kangaroos in October 1944 in place of the "unfrocked Priests." Although they were retired in late September with the advent of the Ram Kangaroos, some "unfrocked Priests" were retained in Canadian tank units to serve as utility vehicles. The Canadian 4th Armoured Brigade created a "Battle Lorry Group" with about ten "unfrocked Priests" that were used for supply and casualty evacuation.

Although not as well known as the Normandy Kangaroos, a similar program was carried out in Italy. A "Kangaroo Army" was created by REME (Royal Electrical and Mechanical Engineers) in Italy starting in October 1944 with the conversion of 75 Sherman III (M4A2) tanks and 102 Priests. These were intended to support the offensives planned for the spring of 1945. The 9th Armoured Brigade was converted into a specialized "Funnies" armored unit with 52 Sherman Kangaroos and 56 Priest Kangaroos delivered to the 4th Hussars, and 40 Priest Kangaroos to the 14/20th Hussars. Probably their most celebrated use was during the battle for Medicina on April 16, 1945, when the Priest Kangaroos of the 14/20th King's Hussars were used to speed the assault of the 6th Gurkha Rifles in attacks against fortified German positions.

Because of the poor road conditions on many of the Pacific islands, some consideration was given to building a smaller 105mm HMC on the M5A1 light tank chassis using the lighter M3 105mm howitzer. Although test examples of the T82 105mm HMC were built, series production was never approved. (Patton Museum)

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The M7 105mm HMC saw widespread service in the final year of the fighting in the Pacific in an assault gun role. The US Army infantry divisions frequently used it in their regimental cannon companies, which consisted of two light platoons with four M8 75mm MHC and a heavy platoon with two M7 105mm HMC. This is a cannon company, probably from the 27th Division, exercising with infantry on Espirito Santo in the New Hebrides on December 1944. (NARA)

M7 105mm HMC in the Pacific

The M7 105mm HMC saw very little service with the US Army in the Pacific Theater of Operations (PTO) until late in 1944. Since no armored divisions were deployed to the Pacific theater, only three AFAB served there, all non-divisional corps-support battalions which fought in the Philippines campaigns in 1944–45. Several infantry divisions taking part in the Philippines campaign retained M7 105mm HMC in their cannon companies in spite of the 1943 TO&E changes. These divisions usually had the newer M8 75mm HMC in the two light platoons and two M7 105mm HMC in the heavy platoon. In February 1944, Army Ground Forces authorized TO&E 7-14S, a special cannon company organization which required theater commander approval. This special organization allowed the substitution of six M7 105mm HMC for previous equipment and this configuration was used by many infantry divisions in the Philippines. The most extensive use of the M7 105mm HMC came in the Luzon campaign starting in January 1945. Curiously enough, the M7 105mm HMC proved to be a very effective tank-destroyer during the battles with the Japanese 2nd Armored Division in January–February 1945 when used for close support by the infantry cannon companies against dug-in Japanese tanks.[1]

In 1942–44, the US Marine Corps operated the old M3 75mm GMC in the antitank battery of their Special Weapons Battalion; they also had two M3 75mm GMC in the regimental antitank company. These were seldom used in the antitank role because of the rarity of encounters with Japanese tanks, but they proved useful as direct fire weapons in attacking bunkers and other targets. These were becoming worn-out by 1944, and in their place the Marine Corps began obtaining the M7 105mm HMC. In Marine service, they were usually called SPM (Self Propelled Mount) although in some units they were nicknamed "siege guns." There were four M7 in each Marine regiment, and 12 per division. The Marine M7 105mm HMC first saw extensive combat during the Okinawa campaign in the summer of 1945.

During the fighting in Burma in 1944–45, the British 18th Field Regiment with the Priest 105mm SP saw combat supporting the Fourteenth Army advance on Rangoon.

[1] See: Steven Zaloga, M4 Sherman vs Type 97 Shinhoto Chi-ha: The Pacific 1945, Osprey Duel 43, 2012.

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The US Marine Corps began switching from the M3 75mm GMC to the M7 105mm HMC in its special weapons companies in late 1944. This is a pair of M7 105mm HMC of the 22nd Marines' Special Weapons Company firing on Japanese positions on the Oroku peninsula on Okinawa on June 11, 1945. (NARA)

Clerical cousin: Sexton 25-pounder SP

Although the Priest 105mm SP had proven very effective at El Alamein and in the subsequent Tunisia campaign, the need to maintain a separate supply of 105mm ammunition for this weapon was a logistical irritation that the Royal Artillery preferred to avoid.

Britain had produced a small batch of 25-pounder self-propelled guns on the Valentine chassis in 1941, later known as the Bishop. These vehicles were not well liked because of the cramped condition in the enclosed gun casemate. They served with the 121st Field Regiment at El Alamein and with the 142nd Field Regiment on Sicily and Italy in 1943 before being retired late in 1943.

In early 1942, the commander of the Canadian Army Overseas (CAOS), Gen A. G. L. Laughton, requested that a self-propelled 25-pounder be supplied to equip the field artillery regiments in the Canadian armored divisions, based on one of the tanks manufactured in Canada. Although the Valentine was manufactured in Canada, in March 1942, the Director of Artillery ordered that the design be undertaken on the more substantial Ram II cruiser tank. The Ram was a Canadian design based on the lower hull and power-train of the American M3 medium tank, and was manufactured at the Montreal Locomotive Works (MLW). The 25-pounder gun itself was already being manufactured at a new plant of Marine Industries Ltd in Sorel, Quebec.

A Sexton I during its manufacture at the Montreal Locomotive Works. This shows some of the details typical of the initial Canadian production contract, including the three-piece differential cover and the lack of the battery box and generator box on the rear hull corners. This is a relatively late vehicle from the production batch, serial number 114, completed in September 1943. (LAC PA-183207)

Development of the new 25-pounder SP was undertaken by the Army Engineering

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Design Branch (AEDB) under the codename "Project 13" and it paralleled the T32 105mm HMC prototype. Since the MLW was a subsidiary company of ALCO in Schenectady, there was cross-fertilization in design concepts. MLW completed a wooden mock-up of the design on a Ram chassis by the early summer and a mild-steel pilot was completed on June 23, 1942. The pilot was dispatched to Petawawa, Ontario for firing trials which revealed a number of durability problems with the gun mount. However, the design concept was so promising that an initial contract for 24 vehicles was awarded to MLW in June 1942. Gen McNaughton was pleased enough with the design that he requested 84 vehicles for the CAOS on September 19, 1942. In the end, some 124 Ram 25-pounder SP were ordered for the Canadian Army from MLW. These were manufactured from April to September 1943 and the 23rd Field Regiment of the Canadian 4th Armoured Division was the first unit equipped in April 1943.

Comparative technical characteristics

	M7 105mm HMC	25-pounder Sexton II
Crew	7	6
Combat weight (tons)	25.3	28.5
Length (ft)	19.7	20.1
Height (ft)	9.6	8.0
Width (ft)	8.6	8.9
Max. speed (mph)	24	24
Range (miles)	125	125
Fuel capacity (gal)	175	175
Engine	R975 C1	R975 C1
Armament	105mm M2A1	QF 25-pdr "C" Mk II
HE projectile weight (lb)	33	25
Range (yards)	12,205	13,400
Rate of fire (rpm)	8	8
Elevation (degrees)	-5/+35	-9/+40
Traverse (right/left in degrees)	30/15	15/25
Ammunition (+trailer)	69 (+45)	112

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1: PRIEST KANGAROO, 3 TROOP, A SQUADRON, 4TH (QUEENS OWN) HUSSARS, 9TH ARMOURED BRIGADE, ITALY, APRIL 1945

A Squadron, 4th Hussars was re-equipped with Priest Kangaroos in mid-January 1945. They were repainted by the REME in the usual SCC 15 olive drab and carried typical RAC markings including the A Squadron triangle with the troop marking inside in Roman numerals (3 Troop) and the individual vehicle number (7) in Roman numerals. On the front differential cover, mirrored on the back, are the regiment AoS (52 on a red square) and the brigade's insignia (white horse on bright green square).

2: SEXTON 25-POUNDER, C TROOP, 10/65 BATTERY, 4/22 FIELD REGIMENT (SP), 6TH SOUTH AFRICAN ARMOURED DIVISION, ITALY, APRIL 1945

The 4/22 Field Regiment (SP) converted from Priests to Sextons starting in November 1944 prior to the April 1945 Allied offensives. They were finished in the usual US lusterless olive drab. The South African markings differed from British Royal Artillery style in that the shape of the insignia indicated the battery. So in 4/22 Field Regiment, the triangle indicated the first battery (7/64 Bty), the square the second battery (10/65 Bty) and the circle the third battery (11/66 Bty). The symbol was divided in the usual Royal Artillery fashion in red/blue. The symbols inside the regimental insignia indicated the troop and gun, so in this case C Troop Gun 4. On the front is the AoS insignia (74 in a red/blue square) and the 6th South African Armoured Division insignia. This vehicle was named "Hornet II."

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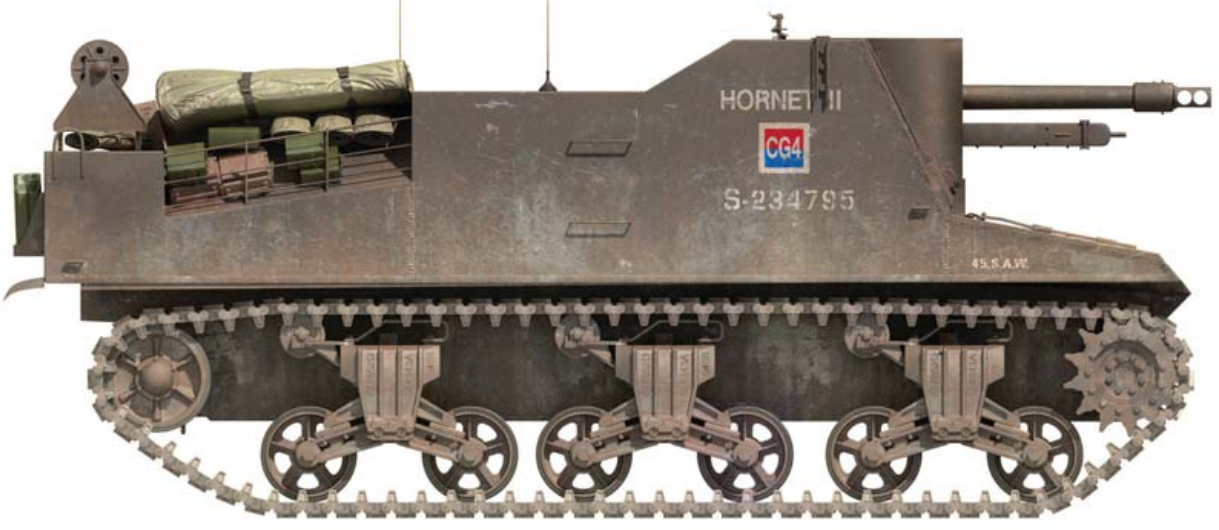

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The Marine Corps received both the M7 and M7B1. This is a Marine M7B1 in northern China near Tientsin in 1946 during the short occupation there by the III Amphibious Corps. (NARA)

In the meantime, a parallel program was underway in the United States based on a similar British requirement. Although the US had begun to divert M7 105mm HMC production to the British Eighth Army, there was interest in a self-propelled vehicle armed with the standard 25-pounder instead of the 105mm howitzer. This program was authorized by Ordnance in June 1942 as the T51 25-pounder Gun Motor Carriage. The first T51 pilot was actually the second T32 pilot, with the superstructure rebuilt to accommodate the 25-pounder Mark II. Initial test firings at Aberdeen Proving Ground led to cradle failures similar to those experienced in Canada. In the event, the British Army became aware of the Canadian work on the Ram 25-pounder and interest in the T51 program began to wane. The T51 was formally canceled in March 1943.

The British decision to shift its focus to the Canadian 25-pounder SP coincided with policy discussions over the future of tank production in Canada. At a March 26, 1942, meeting with the British Tank Commission in Ottawa both sides agreed to terminate Ram production at the earliest convenient opportunity in favor of standardizing on the American M4A1 medium tank. The Canadian version of the M4A1 built by MLW was designated as the Grizzly, and production was slated to begin in Montreal by July 1943. The Grizzly was essentially similar to the M4A1 except for some modest production and equipment details. By the time the Grizzly was ready for production, US Sherman production had ramped up to such an extent that Grizzly production was largely redundant. Instead, the production assets set aside for Grizzly were redirected to the 25-pounder SP for the British requirement. Manufacture of the Grizzly began in August 1943 but only 188 were completed.

In May 1943, the 25-pounder SP was renamed as the Sexton to match the earlier British practice of using clerical names for self-propelled artillery such as the Bishop and Priest. In spite of the new official name, the designation "Ram 25-pounder" remained standard through 1944. The original Canadian production series on the Ram II chassis was designated as the Sexton I, while the new British production series was designated as Sexton II. Although some histories state that the Sexton I was based on the Ram chassis and the Sexton II on the Grizzly, the matter was not so clear-cut. The early production run of the Sexton II had features usually associated with the Ram such as the three-piece

The second T32 pilot was rebuilt as the T51 25-pounder GMC based on a British requirement. The program did not proceed beyond this test vehicle once it became evident in early 1943 that the British Army preferred to acquire the Ram 25-pounder.

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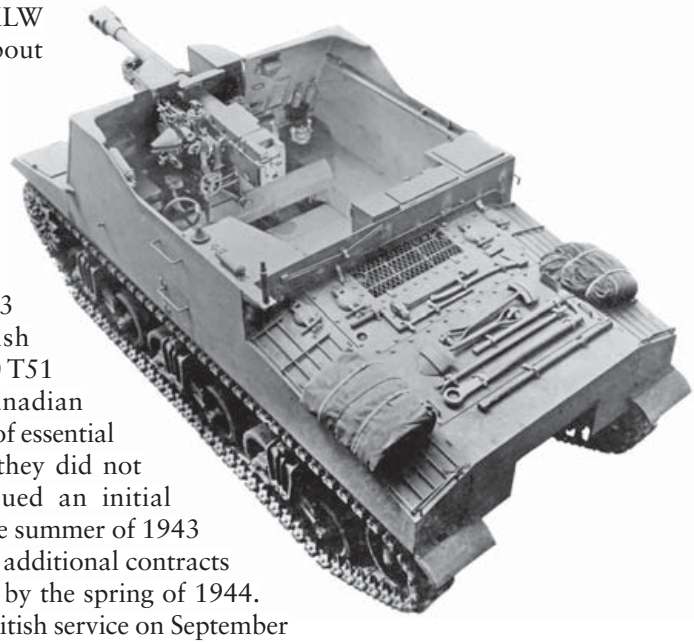
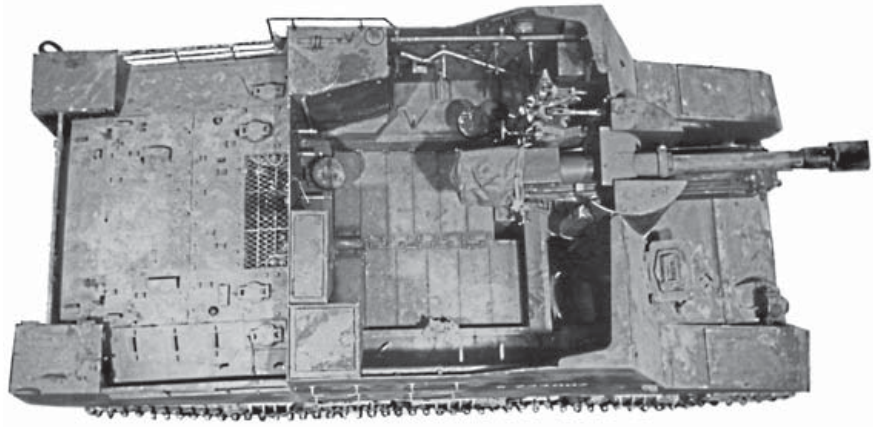
transmission. As late as July 1944, MLW estimated that the Sexton chassis had about 71 percent in common with the Ram.

One of the Sexton pilots sent to the UK in November 1942 was dispatched to the School of Artillery at Larkhill with the 15th Field Regiment, Royal Canadian Artillery for final service evaluation. A series of demonstrations to British officers at Larkhill in January 1943 were so successful that the British recommended canceling a contract for 300 T51 25-pounder GMC in favor of the Canadian vehicle. The Larkhill trials also led to a list of essential modifications to the vehicle, so long as they did not interfere with manufacture. Britain issued an initial production contract for the Sexton II in the summer of 1943 for 300 vehicles, and this was followed by additional contracts to bring the final total to 2,026 Sexton II by the spring of 1944. The Sexton II was formally accepted for British service on September 6, 1943, and production of the Sexton II began in October 1943. In January 1944, the British and Canadian armies reached an understanding that Canada would order no further Sextons from MLW, but rather, future Canadian needs beyond the original Sexton I contract would be provided out of the British Sexton II production run. The Sexton had a higher unit cost than the M7 105mm HMC: £20,000 versus £15,000 ($73,000 vs $56,600).



An overhead view of a Sexton I showing some of its distinctive features, including the lack of boxes on the rear hull corners introduced on the later Sexton II.

There was a continual string of improvements to the Sexton during the course of production, with AEDB recording some 660 separate changes. At the start of the Sexton II production run (vehicle 125, S-233626), the vehicle batteries were moved to a box at the left rear of the vehicle while the Homelite auxiliary generator was moved to a box on the right rear; this is the primary external feature which distinguished the Sexton I from the Sexton II. Other changes on the Sexton II included new towing hooks and the addition of rear mudguards. In October 1943 with vehicle 147 (S-233648), two Bren LMG Mk II were added for vehicle self-defense along with associated mounting pintles. In December 1943, starting with vehicle



An informative overhead photo of a Sexton II (S-234007) built in January 1944. This shows some of the distinctive features of the Sexton II, including the two boxes on the rear hull roof. This particular vehicle was completed shortly after the E8546 "Mary Ann" transmission cover was introduced on the production line.

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A completed Sexton II is driven out to the test range at the Montreal Locomotive Works. This view shows some of the features typical of the British production vehicles in 1944 including the single-piece E8546 cast differential cover, and the distinctive Canadian CDP track. (LAC e000762379)

374 (S-233875), the one-piece transmission with the new single-piece E8546 "Mary Ann" transmission cover was introduced and this became standard after this point, replacing the earlier three-piece differential cover and transmission. Starting in January 1944 with the first vehicle of the second British production contract (S-233926), the American-style T54E1 track gave way to the Canadian-designed CDP track (cast-steel dry-pin), which also necessitated the use of a new 17-tooth drive-sprocket. However, some units in the field continued to use the American track since it was already available in ample numbers in the supply chain owing to its use on British Sherman tanks. The Continental R975-C1 engine gave way to the -C4 engine at vehicle 1,325 (S-234826) in July 1944. It is also worth noting that many components, while appearing to be identical with American-manufactured Sherman parts, were in fact subtly different. For example, the Sexton used the reinforced C40757-1 central cast bogie assembly instead of the usual D47526 casting found on US-built Sherman tanks; the Canadian version had more substantial ribbing on the face.

Sexton production (by quarter), Montreal Locomotive Works 1943–45

II/43	III/43	IV/43	I/44	II/44	III/44	IV/44	I/45	II/45	III/45	IV/45	Total
70	53	301	423	425	250	138	162	148	152	28	2,150

Sexton production by contract batches

Type	Start census number	End census number	Number in series	Serial numbers	Production dates
Sexton I	S-159377	S-159400	24	1–24	Apr 43
Sexton I	CS-172726	CS-172785	60	25–84	May–Jun 43
Sexton I	CS-204782	CS-204821	40	85–124	Jul–Sep 43
Sexton II	S-233626	S-233925	300	125–424	Sep–Dec 43
Sexton II	S-233926	S-235061	1,136	425–1560	Jan–Oct 44
Sexton II	S-286849	S-287438	590	1561–2150	Oct 44–Oct 45

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1: PRIEST 105MM SP, 18TH FIELD REGIMENT ROYAL ARTILLERY, BRITISH FOURTEENTH ARMY, BURMA, MARCH 1945

The 18th Field Regiment was deployed with the Priest while supporting the Fourteenth Army drive on Rangoon during the Burma campaign in early 1945. The vehicle was painted in overall olive drab. The markings are quite simple and consist of a census number and vehicle name on the hull side. The 18th Field Regiment does not appear to have used the usual Royal Artillery battery markings. The Fourteenth Army insignia was carried on the center of the front transmission housing and on the left rear corner of the hull and is shown here in detail in the inset drawing.

2: M7 105MM HMC, CANNON COMPANY, 383RD INFANTRY, 96TH DIVISION, OKINAWA, MAY 1945

This M7 105mm HMC is in the usual overall olive drab with the vehicle name "Waddlin' Willie" on the hull side along with a cartoon of a gun-packing turtle painted above it by the crew. The vehicle registration number has been repainted in a non-standard stencil in the usual location on the rear side of the hull. The bumper codes on the front and rear identify the division and regiment (96 383-I on the left) and the cannon company and vehicle (CN 3) on the right.

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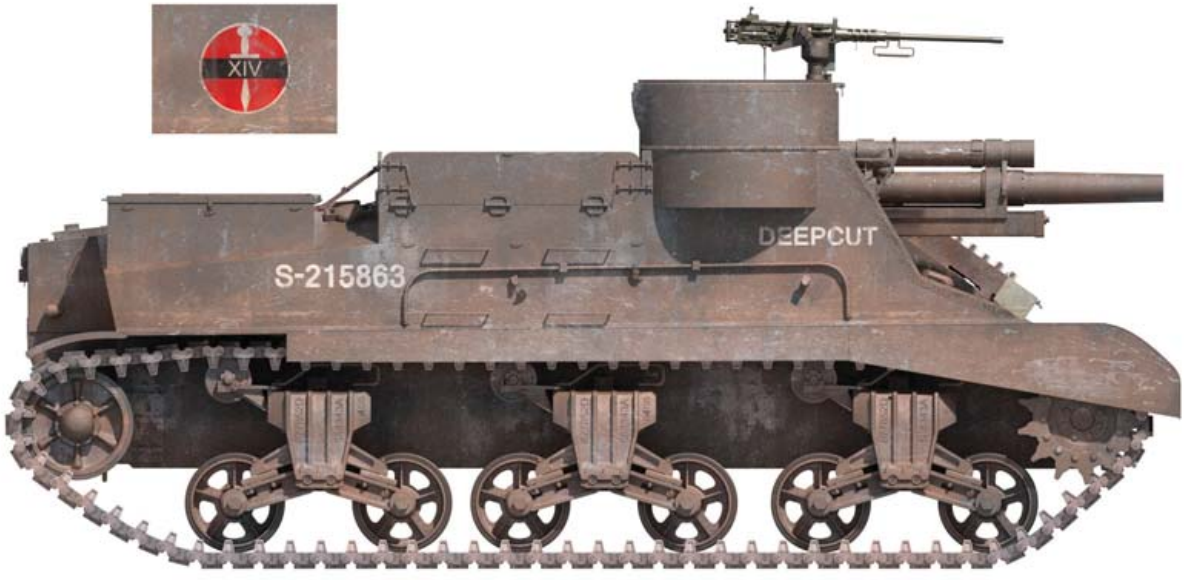

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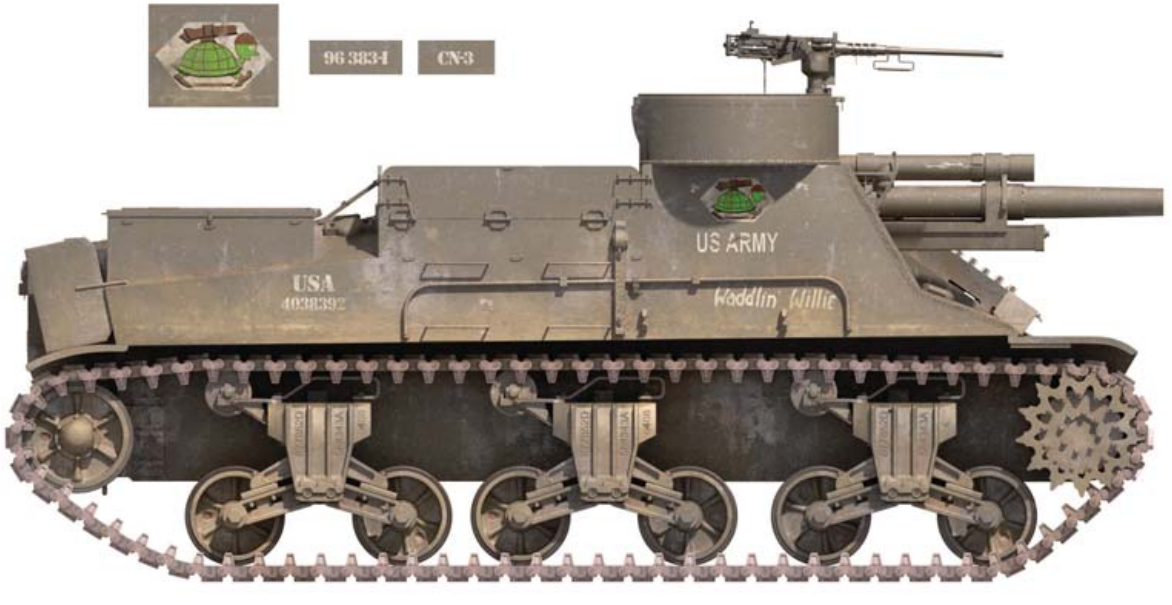

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A Sexton II of the Polish 1.pam (*pulk artylerii motorwej*: Motorized Artillery Regiment) of the Polish 1st Armoured Division in action in Northwest Europe in the summer of 1944. It is named "Raclawice" after the April 1794 battle against the Russians by Tadeusz Kosciuszko's peasant army. While this might seem to be a Sexton I, judging from the three-piece differential cover on the bow, it is in fact an early Sexton II (S-233841, serial 340) from the first British production contract. (Author's collection)

The Ram 25-pounder began arriving in the UK in late 1943, and by the end of the year, 73 had been received. Priority was given to armored divisions slated for deployment in Normandy, and through the spring of 1944, eight British, Canadian, and Polish regiments had been equipped. No British armored divisions landed on D-Day, but the 86th and 147th Field Regiments (SP) which had been organized for corps-level support were attached to the 50th Northumbrian Division for the landings at Gold Beach. Eight Sexton regiments were in combat in Normandy by July 1944, increasing to ten regiments by August 1944 including two Canadian and one Polish regiment. The number of Sextons in the Northwest Europe (NWE) campaign was modest compared to the US deployment of the M7 105mm HMC since the British deployment pattern was different. In the American case, there were three AFAB per armored division for a total of 54 M7 per division, while the British had only one Sexton regiment per armored division, for a total of 24. Some armored divisions occasionally had a second regiment temporarily attached from corps artillery. Besides the five Sexton regiments organic to the armored divisions in NWE, there were five other regiments attached at corps-level through the end of 1944. These were often attached to various armored brigades for particular missions. Total Sexton strength peaked in March–April 1945 at 12 regiments. This included the Canadian 8th Field Regiment,

A Sexton II of C Troop, 342nd Battery, 86th East Anglian (Hertfordshire Yeomanry) Field Regiment attached to the 11th Armoured Division passes through the ruins of Écouché on August 20, 1944, during the Falaise Gap battles. This is another example of an early-production Sexton II with the three-piece differential cover. (LAC e000762380)

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transferred from Italy in March 1945. There were about 290 Sextons in units in the spring of 1945; counting reserves and vehicle parks, the total was about 410 in NWE at peak strength.

A number of formations were formed or re-equipped with the Sexton in the Italian theater, mostly during the autumn of 1944. This included the 1st Royal Horse Artillery, South African 4/22 Field Regiment of the 6th Armoured Division, and the Polish 7.pak (*pulk artylerii konnej*: Horse Artillery Regiment) of the 2nd Warsaw Armoured Division.

In 1943, the Canadian 19th Field Regiment suggested the need for a troop command post vehicle but a formal British Army requirement was not issued to MLW until May 22, 1944. This was designated as the Sexton GPO (Gun Position Officer). The pilot model was based on a normal Sexton I, but with the 25-pounder gun removed. The mounting was left in place so that a 25-pounder could later be fitted. The ammunition ready rack in right rear of the fighting compartment was replaced by a second radio. A variety of added equipment was installed including a plotting board, and an external junction box for the Tannoy (loudspeaker). The vehicle was formally evaluated in August 1944, but British artillery officers refrained from demanding any extensive changes because of the recognition that the design would have to be accepted "as is" if it were to be manufactured in time to see combat use. Many of these vehicles were rebuilt from older Sexton I from the initial Canadian production batches. The first production examples began arriving in NWE in early 1945.

The crew of "Hardy II," a Sexton II, Gun No. 3 of C Troop, 10/65 Battery, 4/22 Field Regiment of the South African 6th Armoured Division reloads 25-pounder ammunition on April 11, 1945, near Pian di Setta during the Fifth US Army offensive in the Bologna region in northern Italy. This regiment had previously been equipped with the Priest and began converting to the Sexton in November 1944 prior to the spring offensive. (NARA)

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A Sexton GPO (Gun Position Officer) named "Darling" of D Troop, 36th Battery, Canadian 23rd Field Regiment on parade in the Netherlands at the end of the war in 1945. This particular vehicle was rebuilt from a Sexton I of the third Canadian contract batch (T-204815, serial 118). (LAC)

The most obscure Sexton relative was the Australian SP 25-pounder Yeramba on a redundant M3A5 medium tank chassis. Although patterned on the Sexton, there were many detail differences including the retention of the M3A5 side-doors as seen in this view of the prototype in 1947. (Australian War Memorial)

The Australian connection: Yeramba

No doubt the most obscure vehicle in the Priest family tree was Australia's SP 25-pounder Yeramba, named after an Aboriginal spear-throwing device. This program was started in Australia in 1947 as a local means to equip the 22nd Field Regiment, Royal Australian Artillery which had been designated to support the 2nd Armoured Brigade Group. Plans were obtained of the Sexton, but Australian engineers used these more for inspiration than to

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The erstwhile replacement for the M7 105mm HMC was the new M37 105mm HMC based on the M24 Chaffee light tank chassis. It entered production too late in 1945 to see any combat service, and its production was cut short by postwar cancellations. It did see combat in Korea, and this shows a vehicle named "Hell Fire" of the 58th Field Artillery Battalion, 3rd Infantry Division firing against Chinese positions along the Imjin River on April 12, 1951.

produce a direct copy. The vehicle was based on M3A5 medium tanks left over from the war. Although very similar in appearance to the Sexton, the Yeramba could be distinguished by the presence of the M3A5 side hull doors. Following trials in December 1949 of a prototype at the Puckapunyal range, in February 1950 the government authorized the conversion of 13 more tanks. These were completed between November 1950 and August 1952 and served with the 22nd Field Regiment at Puckapunyal until 1957 when they were declared obsolete.

A small portion of the M7B1 fleet was modified during the Korean War into the M7B2 configuration to increase the maximum howitzer elevation. Raising the howitzer also necessitated extensions to the pulpit and front armor. This example is seen in Bundeswehr service in the 1950s. (Michael Franz collection)

Replacing the Priest

Although the M7 105mm HMC on the M4 medium tank chassis had proven to be a perfectly adequate design, Ordnance recognized that such a weapon could be mounted on a lighter and more nimble chassis like the new M24 light tank. So on July 8, 1943, the Army initiated the program under the designation T76 105mm HMC. Instead of using the standard towed M2A1 howitzer, the design used a version of the more compact M4 howitzer that had been designed for the turreted M4 105mm assault gun. The T76 was based on a modestly modified M24 hull with the engine in the rear position like the tank version. Most of the initial effort was devoted to developing the howitzer, and the pilot was shipped to APG for trials in early July 1944. After many

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The M7 105mm HMC continued to see combat use decades after the war. This is an M7 of the 822nd Reserve Artillery Battalion of the Israeli Artillery Corps in combat during the 1967 war with Egypt. (Israeli Government Press Office)

small design changes, the vehicle was accepted for production as the M37 105mm HMC in January 1945. Owing to the late date at which the design was accepted for production, only 316 vehicles of the 448 ordered were manufactured, starting in October 1945. None were deployed in combat in World War II, though the type did see service during the Korean War. It was subsequently replaced by the turreted M52 HMC on the M41 light tank chassis in the late 1950s.

In view of the large number of M7 tanks which survived the war, the M7 remained in service into the 1950s in the US Army and served during the Korean War in 1950–53. One problem with the M7 105mm HMC in the mountainous Korean terrain was its lack of elevation compared to the towed version, only 35 versus 65 degrees. As a result, a modification program was initiated that resulted in the M7B2 105mm HMC. This used a modified M7J1 howitzer mount inside the vehicle to elevate the howitzer high enough to take full advantage of its elevation potential. This necessitated changes to the frontal armor as well as to the pulpit mounting. A total of 127 conversions were undertaken, all on the M7B1 version. Most remaining M7B2 were exported to NATO armies in Europe via the Military Aid Program with the largest recipient being the German Bundeswehr in 1956. The Sexton was exported to a number of countries after the war, even a batch to Portugal in 1976.

By the early 1960s, the days of the open-topped self-propelled gun were past because of the advent of tactical nuclear weapons in the Cold War confrontation in Europe. The US Army replaced the M7 and M37 with the turreted M52 self-propelled 105mm howitzer. In Britain, the Sexton was replaced by the turreted Abbot 105mm self-propelled gun.

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FURTHER READING

The subject of the mechanization of field artillery for the armored divisions has not attracted as much attention as tank development or infantry mechanization. This book was based heavily on archival research at the US National Archives and Records Administration, the Patton Museum, the US Army Military History Institute, the Ordnance Museum (Aberdeen Proving Ground), and also on documents provided by Peter Brown, Lee Ness, and Joe Sauve from the UK Public Record Office (National Archives) and the Library and Archives of Canada.

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LIST OF ABBREVIATIONS

AEDB	Army Engineering Design Branch
AFAB	armored field artillery battalion
AFB	Armored Force Board
ALCO	American Locomotive Works
AoS	arm-of-service
APG	Aberdeen Proving Ground
AWD	Army Workshop Detachment (Canadian Army)
CAOS	Canadian Army Overseas
ETO	European Theater of Operations
GMC	gun motor carriage
HAC	Honourable Artillery Company (British Army)
HMC	howitzer motor carriage
LCT	Landing Craft Tank
MLW	Montreal Locomotive Works
NWE	Northwest Europe
PTO	Pacific Theater of Operations
RA	Royal Artillery (British Army)
RAC	Royal Armoured Corps (British Army)
RCA	Royal Canadian Artillery
RHA	Royal Horse Artillery (British Army)
SP	self-propelled
TO&E	table-of-organization-and-equipment